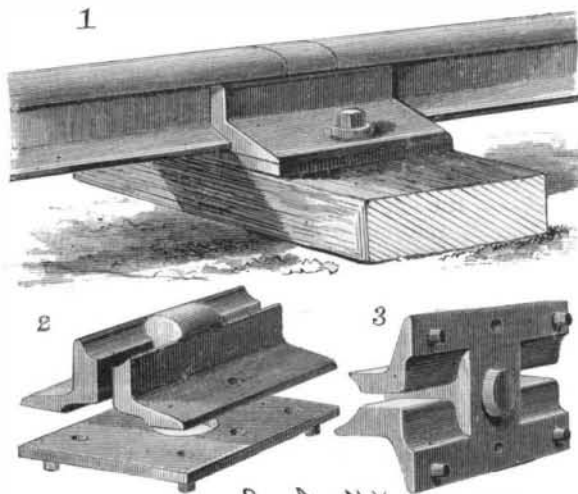


IMPROVED RAIL CHAIR.

The engraving shows a rail chair that prevents spreading and creeping of the rails, and forms good joints. The chair is formed of two side pieces, having their inner sides curved and shaped to fit snugly against the sides of the rail. These pieces are united at the middle by a cross piece extending from top to bottom, and having its top shaped the same as the head of the rail. The recesses between the plates are so shaped that an end of a rail can be passed in between them, the ends of the rails abutting against the ends of the center cross piece, as shown in Fig. 1. The outside plate is slightly higher than the inside one (Figs. 2 and 3), to form a flange for carrying the wheel over the joint. Tenons project downward from the under side of the cross piece and from each end of each side piece, and an aperture is formed in the middle of the lower part of each side piece; the tenons fit in apertures in a bottom plate. Tenons on the under side of



JAKUES' IMPROVED RAIL CHAIR.

this plate fit in holes in the tie. This plate is also provided with apertures corresponding with those in the side pieces, and through which the bolts holding both parts to the tie are passed. The lower ends of the bolts are countersunk in the ties, and elastic washers are placed under the nuts. It will be seen that the chair forms an even joint, holds the rails securely, and cannot creep or give laterally.

This invention has been patented by Mr. George W. Jaques, of Burton, Ohio.

Old Shoes Remade.

It may be a surprise to some people to learn that the old shoes cast into the ash barrels are liable to reappear in the boudoir and parlor. A New York reporter who saw a couple of rag pickers quarreling over a lot of worn out and seemingly worthless foot gear interviewed one of the chiffonniers, and found that they sold them to the manufacturers of wall paper. He followed up the clew, and on questioning the foreman of one of these establishments elicited the following bits of information.

"We buy," said the foreman, "all the boots and shoes that the scavengers can bring us. We pay different prices for the different qualities of leather. A pair of fine calfskin boots will bring as high as 15 cents. We don't buy cowhide boots. The boots and shoes are first soaked in several waters to get the dirt off them. Then the nails and threads are removed, the leather ground up into a fine pulp, and is ready to use.

"The embossed leather paperings which have come into fashion lately, and the stamped leather fire screens, are really nothing but thick paper covered with a layer of this pressed leather pulp. The finer the quality of the leather, the better it takes the bronze and old gold and other expensive colors in the designs painted on them. Fashionable people think they are going away back to the mediæval times when they have the walls of their libraries and dining rooms covered with embossed leather. They don't know that the shoes and boots which their neighbors threw into the ash barrel a month before form the beautiful material on their walls and on the screens which protect their eyes from the fire.

"We could buy the old shoes cheaper if it were not for the competition from carriage houses and bookbinders and picture frame makers. I don't know how many other trades use old shoes and boots, but the tops of carriages are largely made of them, ground up and pressed into sheets. Bookbinders use them in

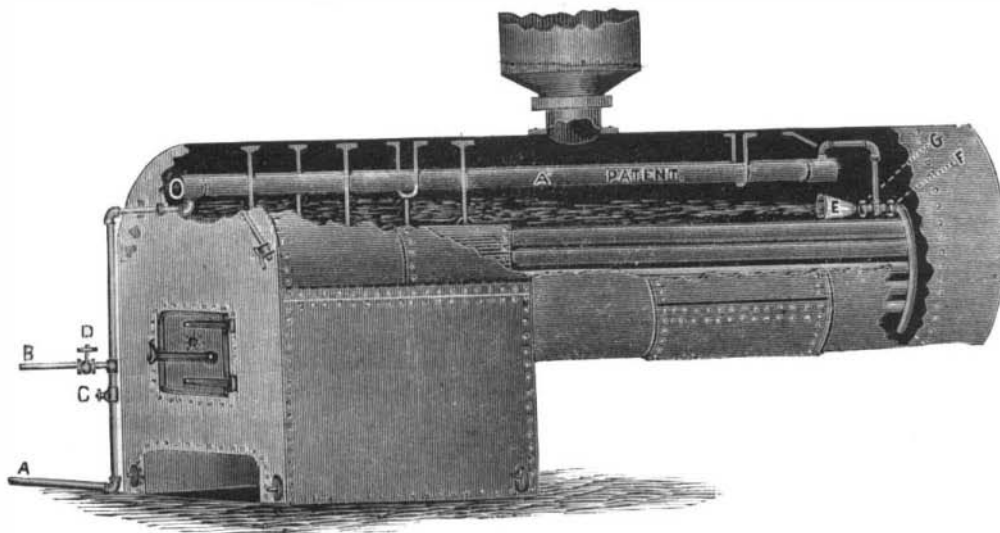
making the cheaper forms of leather bindings, and the new style of leather frames with leather mats in them are entirely made of the cast-off covering of our feet."

Steam for Extinguishing Fires.

The New York Steam Heating Company, who have had their pipes laid under the streets and furnished steam for heating and power for operating all kinds of machinery, in the lower part of this city, are now extending their pipes further up Broadway, and in time they expect to compass the entire city with their heating system. The editor of the *Fireman's Journal*, in a conversation some months ago with the secretary of the steam heating company, was informed that before long the company would be prepared to put out fires in that portion of the city covered by their mains. Recently W. C. Andrews, president of the company, explained definitely the plan they propose to adopt in the dry goods district for putting out fires. He said: "The use of steam for putting out fires is not new. It is in operation in a great many large factories all over the world. There has never been any public system, because the conditions have never existed before under which it could be put in operation. The steam drives out the air and smothers the fire, and does not damage the goods as water does. By putting stand pipes in each building, with four or five inch nozzles on each floor, which could be turned on from the street, the steam could be turned on in any part of the structure. It would be so light adraught on our boilers that I doubt if it would lower the pressure to put out any ordinary fire. The dry goods district contains more inflammable material than any similar territory in the world. It is inadequately protected at present." This might do well enough in confined spaces, but where the air has full access to the flames firemen are of the opinion that the fire would beat the steam every time. Still, we hope the experiment will be tried, for it may be made a valuable auxiliary to the fire department.

IMPROVED BOILER CLEANSE.

The engraving shows a simple and effective scale or sediment remover and preventer, which, being purely mechanical in its operation, does not require the use of any chemicals. The feed pipe, A, is continued in the boiler, either in an annular or plain form, as required, and is fitted with a branch having two check valves, F and G, the former opening with the line of feed, and the latter, which is connected to a skimmer, E, placed at the ordinary water level, opening against it; the feed pipe is continued from the valve, F, to discharge at whatever point (H) required. On entering the boiler the water in the feed pipe begins at once to rise in temperature, and as deposit and precipitation commence at about 250° Fah., all salts and other impurities are gradually deposited on the bottom of the pipe—the feed water, with all light, non-depositable matter, keeping its flow to the discharge point. Then, every twelve, eight, four, or two hours, according to the quality of the water or the rate of evaporation, the blow-off valve, D, is opened for a minute or two, thus causing the check valve, F, to close by the internal pressure of the boiler, and the check valve, G, to open, when the surface scum, oil, and water, rushing back, carry all deposit out of the feed pipe, through the blow-off pipe, B, into tank drain or heater, as may be required. A very small blow suffices to clear everything out, as all the substance to be discharged is located in one place, ready to be blown out. When a slight scale is neces-



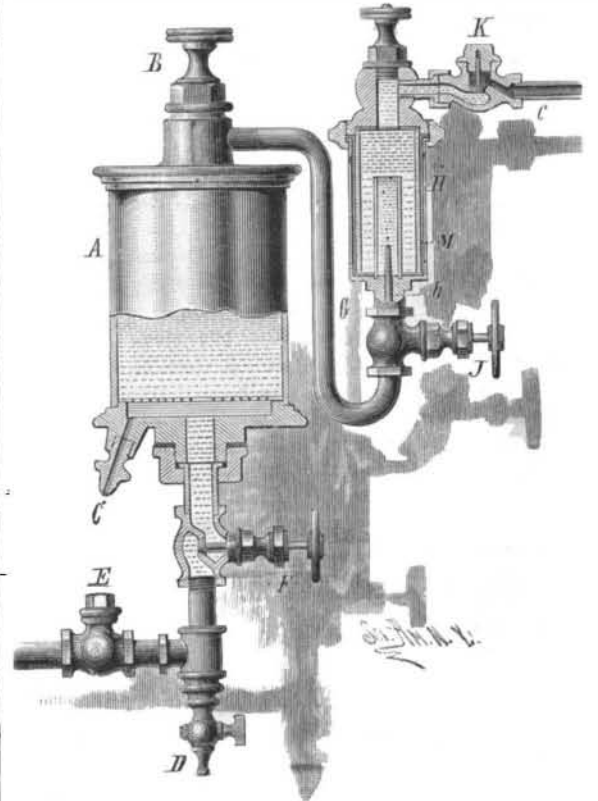
WASS' IMPROVED BOILER CLEANSE.

sary for the protection of the iron, a small portion of the feed water may be permitted to go to the boiler direct through a branch placed between the feed pump and the valve, C. This "cleanser" keeps the water in the boiler pure, separates the foreign matter, and discharges it by means of the oil, scum, and other matter too light to settle.

Further information can be obtained from Mr. J. C. Henderson, agent, 313 Bush St., San Francisco, Cal., or from the patentee, Mr. D. D. Wass, same address.

IMPROVED LUBRICATOR.

In this lubricator, designed for locomotive, marine, and other steam engines, the oil is supplied by the pressure of the steam, and is fed in a fine stream, or drop by drop, by its passage through a fluid of different specific gravity to it within a glass chamber, which admits of the amount of supply being seen and readily



BARCLAY'S IMPROVED LUBRICATOR.

controlled as required. Near the bottom of the cup, A, is a perforated diaphragm with solid center, by which a general pressure on the oil may be obtained. Attached to the cup are a filling cup, B, a cup drain, C, a lower pipe drain cock, D, a check valve, E, in a branch by which steam is admitted from the boiler, a hand valve, F, for regulating the supply of steam to the cup, a pipe, G, for supplying oil from the cup to the indicator or receiver, H, through a small discharge pipe, I, on top of the receiver, a hand regulating valve, J, and a check valve, K, in the pipe, C, which conveys the oil to the engine. The inventor of this lubricator found that by supplying the transparent indicator with a liquid of greater specific gravity than water, preferably an acidulous liquid—such as vinegar, citric, acetic, or sulphuric acid—the feed of the oil in drops was more perfect, and the glass of the indicator retained its transparency for a much longer period, than could be obtained with water, the oil not settling on the glass to the same extent when an acidulous liquid was used. The glass indicator is not supplied direct with the liquid medium, which is held in a glass tube, M, of about two-thirds the height of the outer glass of the indicator. The small oil discharge pipe, b, enters through the closed bottom of this tube, which is of such size as to leave an oil space surrounding it. By this arrangement the outer glass simply contains oil, while the inner contains the denser fluid, and a good working capacity is obtained without interfering with the transparency of the indicator. This lubricator may be easily adjusted to feed any desired quantity, is accurate and reliable, and those which have been in constant use many months present as clear a view of the oil as when first set up.

This invention has been patented by Mr. Peter Barclay, whose address is Cunard Wharf, East Boston, Mass.

Indelible Ink for Paper.

Its indelibility depends on the fact that when bichromate of potassium and gelatine come together, particularly in the form of a thin film, in the presence of daylight, the film becomes insoluble in hot or cold water.

A good formula is the following: Gelatine 2 grs., bichromate of potash 2 grs., nigrosine 10 grs., water 1 fl. oz. Dissolve the gelatine and nigrosine in most of the water, and the bichromate of potassium in the remainder. Mix the two solutions in an amber colored bottle. If it is found that the ink "gums" in the pen, the quantity of gelatine and bichromate may be somewhat reduced. But the ink, when properly made, and dry, cannot be entirely removed from paper by hot or cold water, acids, or alkalis.