APPLICATIONS OF OIL BURNING APPARATUS.

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Different Problems in Heating, Steam Generation, Steel Manufacture and Fabrication, Foundry and Blacksmith Shop Work, Where Oil is Displacing Soft and Hard Coal, Coke, Electricity, and Gas.

Most Novel Application.

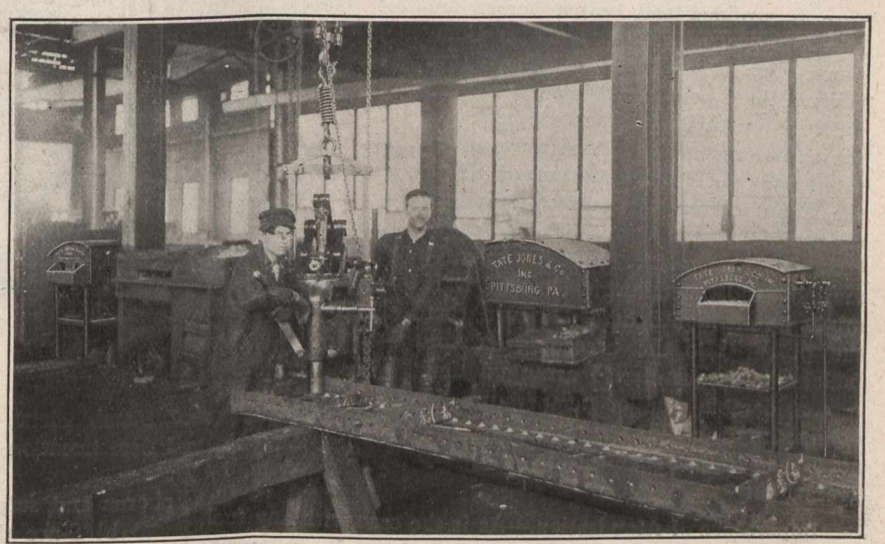
Perhaps the most unique and unexpected application of the oil burning apparatus, is in the heating of railway coaches on the electric divisions of steam railroads. The New York Central and New York, New Haven and Hartford Railroads have both installed vertical steam boilers in the electric locomotives of their new equipment, and equipped same with oil burners, pressure tanks for oil and water, and utilized the compressed air system of the train for atomizing the oil. Thus as soon as the steam locomotive is detached from the passenger train, the electric motor can be coupled on and the existing piping system of the train used to heat the cars. The expense of installing electric heaters in each car, the expense of power for these heaters and the danger that would have resulted from coal stoves, are all dispensed with in this admirable arrangement.

Oil Burners in Bridge Work.

At the plant of the Pennsylvania Bridge Company, Beaver Falls, Pa., advantage has been taken of many of the latest devices to bring about economical production and fabrication. Among these is the installation of oil burning furnaces for rivet heating, etc.

This consists of a 10,000 gallon supply tank buried in the ground outside the building and near the railroad switch to facilitate the unloading of the oil cars. A No. 0 Kirkwood oil pumping, heating and pressure regulating system located in the shop draws the oil from the supply tank, strains it, and after raising the temperature to the proper point for complete combustion, pumps it to the burners under twenty pounds pressure. Compressed air for atomizing the oil is taken from the regular shop air line, and reduced by a regulating valve to fifteen pounds before being piped to the burners. As only 150 cubic feet of free air compressed to 15 pounds is required under the Kirkwood system, for each gallon of oil burned, the air taken for atomizing is hardly felt.

There are five double-door stationery rivet forges, with hearths 16 x 24-inch, and four similar in design but 12 x 18-inch with the tank containing the oil supply located underneath, and connected to the air supply by a flexible hose. This last furnace is designed to allow of its being moved from place to place in the shop. All these furnaces are equipped with a burner so designed that there will always be perfect atomization of the oil, and also that the one lever regulates both oil and air supply; it is claimed by the makers that the ratio between the oil and air is fixed scientifically. The result claimed is that a careless or inefficient operator cannot help having an inefficient fire, and it is almost impossible to burn the rivets.



View in Steel Fabrication Plant. Oil Burners Used for Heating Rivets in Bridge Works.

Forge Shop of Car Company.

The relative merits of oil, coal and coke as fuel for the forge shop are ever open for discussion and experiment. The writer was recently allowed the favour of taking a trip through the factory of a well-known manufacturer of railroad cars and was much interested in the operation of the oil burning furnaces in their blacksmith shop.

There were seven furnaces ranging in size from 36x48 inches up to practically twice that size. These were used for heating up king pins, bar iron, etc., some to a bending temperature and others to white or welding heats. All of the seven were of the Tate Jones & Company type, and made in Pittsburg. These were designed so that only enough compressed air was supplied to the burner to thoroughly atomize the oil, while the air for combustion was supplied by forced draught by a separate piping system. Thus the air for combustion is not drawn in at the burner from the surrounding air, which always makes a noisy burner, but is forced in under a few ounces pressure, at the rate of approximately 1,440 cubic feet of free air per gallon of oil.

The writer was privileged to view some work on a lot of king pins. These were made from 2-inch billets about 20 inches long and were heated for a distance of 12 inches from the end, at the rate of 21 pins in seven minutes, at the end of which each time was white hot and a ¾ x 2-inch slot was punched through in one operation.

It has been the writer's experience that where hard coal or coke were used in the forge, that the time in tending fires and cleaning out the slag and cinders can be easily an item consuming more time than is usually believed. After witnessing the speed with which the bars, billets and plates were heated up, and the wide range of sizes taken care of, the conclusion was irresistible that, for the same floor space, the oil furnace could approximately double the output where high heats are required on work 2 inches in diameter. Where only bending or swaging heats are required, I should conclude that there is easily a 50 per cent. increase for equal floor space.

Confining the Heat.

Another decided advantage of the old furnace is the ability to confine the heat to the part to be worked. The high blast required by the coke fire when high temperatures are desired, cause considerable discomfort, and hence delay, in two ways. Not only are the flame and cinders scattered over the workmen, but the blaze comes out along the lower side of the piece and heats a greater distance than is desired. For example, I could easily take hold of a 1½-inch rod within two feet of the edge of an 18-inch heat. In my own recollection, I have known heat to run back as far as three feet and more, when taken out of a coke fire. The oil flame as applied, is concentrated more than any other and so obviates this annoying feature of blacksmithing.

The foreman of the shop is proud of a record made recently in which he heated and punched 67 of the king pins