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Table listing contents of the supplement including I. ENGINEERING AND MECHANICS, II. TECHNOLOGY AND CHEMISTRY, III. NATURAL HISTORY, ETC., IV. ART, ARCHITECTURE, ETC., V. ARCHAEOLOGY, VI. MISCELLANEOUS.

PATENT ROYALTIES ON SHOE MACHINERY.

The shoe manufacturers of the United States, or at least a considerable proportion of them, have lately been finding fault with our patent laws and the way in which they are enforced, without, as we conceive, a just apprehension of the grounds on which their complaint is based.

For some years past it has been an extremely unpopular and up-hill work to endeavor to sell to shoe manufacturers a machine for which a royalty was charged on the work done to cover the rights of the patentee. There were many in the trade, including some of its most influential members, who took the position that, for any machine that was of decided advantage to them, they would be willing to pay a sufficient round sum down, and then be the owners thereof, to use as they saw fit, while they did not believe it was possible to offer them a machine the payment for the patent rights in which was to be made on the basis of a specified tax for each pair of shoes produced.

The boot and shoe trade affords one conspicuous instance of the splendid success of a patented improvement, as exemplified in the sole-sewing machine. It was only by a long course of experiment and the investment of a great deal of money that it was perfected; it did not easily obtain a first introduction, so the system of putting it in factories and allowing the manufacturers to pay for its use a small royalty per pair of shoes made, was the only one then thought practicable, and certainly was at the time eminently satisfactory to the trade.

but while they now stood, as a strong corporation, ready and able to meet the issues at law with the manufacturers, they were willing to confer and negotiate in regard to such future royalties as had not been decided upon in their favor by the courts. The convention thereupon appointed a committee of representative manufacturers to take charge of such negotiations, not only with this company, but with all others owning patents which were paid for by royalties, with power to commence legal proceedings should they deem such course advisable.

Patentees generally can certainly have no objections to negotiations looking to a settlement in cash in lieu of royalties for their rights, and such moderate action on the part of the convention is far more sensible than it would have been for its members to rush blindly into expensive and almost interminable litigation.

THE PRALL SYSTEM OF HEATING.

During their recent convention in this city the members of the American Society of Civil Engineers were entertained by the Prall Heating Company. The dinner was cooked throughout by superheated water; and whatever may have been the cost on the relative economy of the system, the cooking was accepted as unquestionably satisfactory.

That bread can be baked and meat roasted by hot water may seem quite incredible to those who think of boiling water only as commonly seen in open vessels. Under atmospheric pressure water can be heated no higher than 212°, far below a roasting temperature. But when confined there is no limit to the temperature it may receive save the weakness or strength of the containing vessel.

The Union Heating Company propose to supply heat and power to houses by a system of pipes circulating water heated under pressure to about 376°, that is, a pressure of about 160 pounds above the atmosphere. In being conveyed a mile in boxed pipes, under ground, the water, it is claimed, loses not more than 1°, so that a temperature of 375° can be maintained in the pipes of a cooking range, a heat sufficient for all culinary purposes.

In the operation of the system, central boiler stations will be established in districts of about one square mile area. The pipes conveying the superheated water from the central station and back again, are laid in the same trench, and are so connected as to allow a forced circulation. The return pipe conveys to the generator all the water not drawn off for domestic or other purposes, thereby saving all the heat not available for heating purposes or for steam power.

The alleged advantages of this system of circulating superheated water over systems of steam heating consist in the smaller size and cost of the service pipes; in the smaller loss of heat by radiation and condensation, owing to the smallness of the pipes; and the saving of fuel through the return of all the unused condensed water to the central generator.

At the trial station at 125th street about 3,000 feet of pipe have been laid. The water to be circulated is heated to about 342°, and is said to be driven through the system at such a rate that no water is allowed to be more than fifteen minutes away from the boiler. It is estimated that two or three cubic feet of water an hour will suffice for heating an ordinary city house, and that the cost to consumers will be much less than with any other system of heating. To determine this, however, we are inclined to think that something more than brief experimental trials, under the management of the company's engineers, will be necessary. However promising a system may be theoretically, serious difficulties are apt to be encountered when it is put to the test of practical use at the hand of ignorant and unskillful servants.

THE RESTORATION OF OUR COMMERCIAL AND NAVAL MARINE.

No question before the American people to-day presents so wide a range of problems of national interest, so many problems having a direct and vital bearing on the prosperity and security of the country as a whole, as that which seeks an answer in the restoration of the United States to their former and proper place among the commercial and naval powers.

Our industrial interests cry aloud for a reconquest of the sea by a commercial marine flying the Stars and Stripes. The security of our coasts, not less than the protection of the mercantile fleets which our enterprising traders are bound to set afloat before another generation passes, demands the speedy building of a navy commensurate in magnitude, capacity, and power, with our position as a nation among the ruling nations of the civilized world.