AN INGENIOUS WATER-DISTILLING APPARATUS.

Water, we are frequently told, constitutes a most important component of our food. It is evident, therefore, that care should be taken to purify the water which we drink, and to remove all the organisms with which it may be charged. To this end some apparatus must be employed whereby the dangerous microbes can be destroyed and the water rendered potable. Such an apparatus is found in a still made by the Cupigraph Company, 138 North Green Street, Chicago, Ill.

The still in question comprises essentially a retort and a condenser. The retort occupies the lower portion of the apparatus and receives the water to be distilled. The condenser is carried in the upper portion of the still, is made tapering in form, and has a conical bottom through which an overflow pipe passes. Water is poured into the funnel at the top of the still, and, after having filled the condenser, passes into the overflow pipe into the retort below.

The steam generated by heating the water in the retort rises, and, coming into contact with the water-filled condenser above, is condensed and trickles into an annular reservoir in the manner shown. The condensation of the steam produces a partial vacuum, which is filled by air conducted from the outside by means of tubes. As the tubes are surrounded partially by hot distilled water and partially by steam, the inrushing air is sterilized before mingling with the products of condensation. The distilled water is, hence, impregnated with oxygen having its organic life destroyed.

The retort or lower chamber has a capacity of two gallons; the distilled water reservoir, a capacity of one gallon. Since the surplus water in the uppermost reservoir will overflow into the lower chamber, it follows that the still cannot readily boil dry.

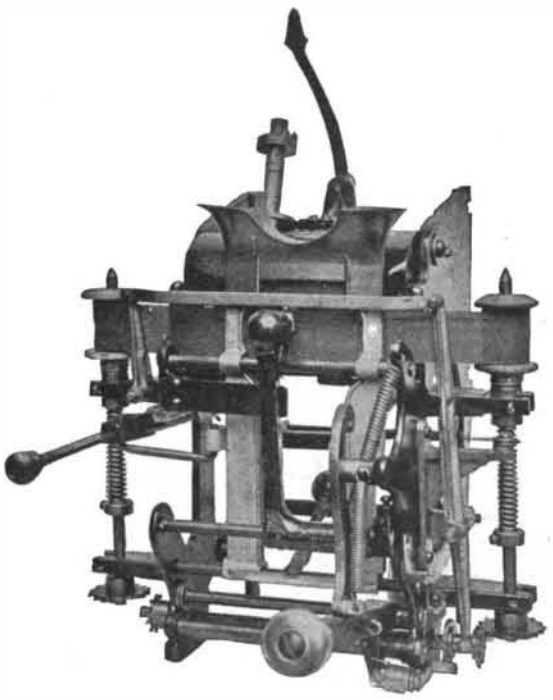
In order that the water-level may be easily ascertained, the retort and reservoir are provided with gage-glasses.

The noteworthy features of this apparatus are the large cold area obtained by the tapering form and conical bottom of the condenser, the inclosed reservoir protected from contact with the atmosphere, the method of providing pure oxygen to the condensed steam, and the means for preventing the still's boiling dry.

AN INGENIOUS WATER-DISTILLING APPARATUS.

THE "ROCHESTER" SYSTEM OF TIME-RECORDING.

In many of the mechanical time-recorders used by the owners of large factories and mills for the purpose of registering the number of hours in which their employés have worked, long tapes are employed, upon which the time of each employé's coming and going is recorded. Admirable as these apparatus may be, mechanically considered, they nevertheless necessitate a vast amount of labor in transcribing the confused records made upon the tape and in the subsequent calculation of wages. In a new system of time-recording which is widely coming into use, the tape has been dispensed with, and in its stead a card-system is employed, which, for ingenuity and simplicity, leaves nothing to be desired. The system in question is used in connection with the "Rochester" time-recorder, made by the Willard & Frick Manufacturing Company, of Rochester, N. Y.



THE TIME-PRINTING MECHANISM.

The cards employed are ruled and printed in the manner shown in one of our engravings, so as to provide for the recording of the time of arrival and the time of departure of every employé, for the total number of hours worked, and for the wages corresponding with the time recorded. The time-printing apparatus employed is located in the lower part of a clock-casing, and consists essentially of two steel type-wheels mounted on independent sleeves fitted on a stationary arbor, one wheel being numbered from 1 to 60 and the other from 1 to 12. In front of the type wheels an inked ribbon is passed, which is brought into contact with the hour and minute type-wheels by means of a hammer carried by a pivoted frame and operated by a lever projecting from the front of the casing at the right hand side. As in many typewriters, the ribbon is automatically shifted from side to side. The card-holder is provided, not with a stationary bottom, but with a movable abutment which limits the distance to which the card can be inserted, and which is automatically operated by a lifting rod in order to be raised every twelve hours by an amount equal to the distance of one vertical space on the card. By means of a shifting lever projecting from the front of the casing at the left hand side, the card-receiver may be moved laterally.

The time-printing apparatus is operated by a Seth Thomas clock having the usual gear-trains and springs. The shaft carrying the hands of the clock drives the type-wheels below, through the medium of beveled gears and a connecting rod. A rotary cam mounted on the hour shaft causes the card-receiver abutment to be moved upwardly through one vertical space, thus bringing the card into proper position for A. M. or P. M. records and preventing the workman from recording the time during which he was absent the previous day. The abutment is dropped to its lowermost position once every week by means of the cam.

THE RECORDER AND CLOCK.

In connection with the recording mechanism two racks are employed, one of which receives the cards after the time of beginning work has been recorded and the other after the time of departure has been registered. Upon beginning work, each employé takes his card from its rack, places it in the card-receiver, and presses the printing lever down, thereby causing the hammer to press the card against the ribbon and the type-wheels. As the record is made, a bell connected with the lever sounds, thus informing the workman that his time of arrival has been registered. He then removes the card, and, after verifying the record, places it in the other rack. After having finished his daily work, the time of departure is recorded and the card again placed in the first-named rack. By glancing over the racks it can be immediately ascertained how many men are present and how many are absent.

The cards used in the "Rochester" system can be so ruled that not only the hours worked during the day can be recorded, but also the time spent upon a single article. The back of the card shown can be ruled in such a manner that the time consumed in working upon various articles can be entered, and the times thus noted must correspond with those printed by the recorder. The hours during which a man has labored upon a single piece may be registered by the recorder itself, if need be. So elastic is this system that, even though a workman labors by the hour and partly by the piece, cards can still be provided which shall meet these requirements. The system can therefore be adapted to any form of wage payment.

The simplicity of this time-recording system, its trustworthiness, the accuracy of its records, coupled with the small amount of clerical labor necessary to compute the wages, have induced the Franklin Institute to award it the John Scott medal and the gold premium.

A "ROCHESTER" TIME-CARD.

The system has been adopted for use in the United States Treasury Department and its branches and by many prominent manufacturers throughout the world.

AN exhaustive examination of compounds of selenium and tellurium has been carried out by R. Metzner. In the case of tellurium he was able to redetermine the atomic weight by two different methods: (1) by the use of tellurium sulphate; (2) by the reduction of tellurous acid with carbon monoxide in presence of silver. He gives the atomic weight of tellurium as 127·9. Among the various new compounds which the author has prepared are two hydrates of selenic acid, well crystallized selenious sulphate, two oxyfluorides and the fluoride of tellurium, a hydrate of hydrofluoric acid, and a compound of tellurium bichloride and phosphorus perchloride. Methods are also given for preparing large quantities of selenic acid, either by electrolyzing seleniate of copper or by oxidizing selenious acid by means of permanganic acid.—Ann. de Chim. et de Phys., xv., 203.