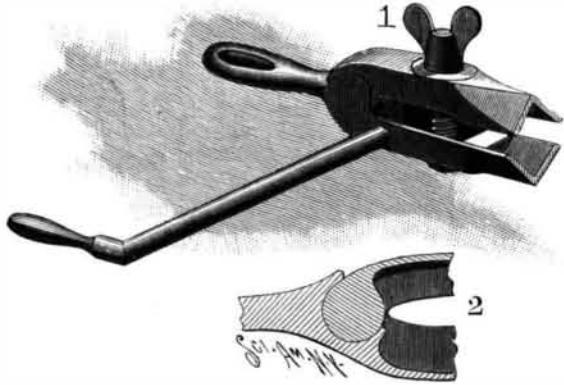


A NOVEL WRENCH.

The illustration presented herewith represents a wrench recently patented by Walter H. Robinson and Edward J. Lawless, 115 Broadway, New York city. Fig. 1 is a perspective view of the wrench, and Fig. 2 is a section taken through the pivoted jaws.

The nut to be turned is received by two jaws so shaped as to form a socket and pivoted upon one another by means of a ball and socket joint, as indicated in Fig. 2. Lips on each side of the joint socket prevent the accidental displacement of the jaws. The movement of the jaws is controlled by a bolt passing through the two members and provided with a wing-nut screw. A spiral spring coiled around the connecting bolt separates the two jaws. The wrench is provided with two handles, at right angles to each other, one extending rearwardly, and used for the purpose of



ROBINSON & LAWLESS' WRENCH.

steadying the wrench when in use, and the other formed on the end of a long arm and projecting laterally, to be used for turning the wrench.

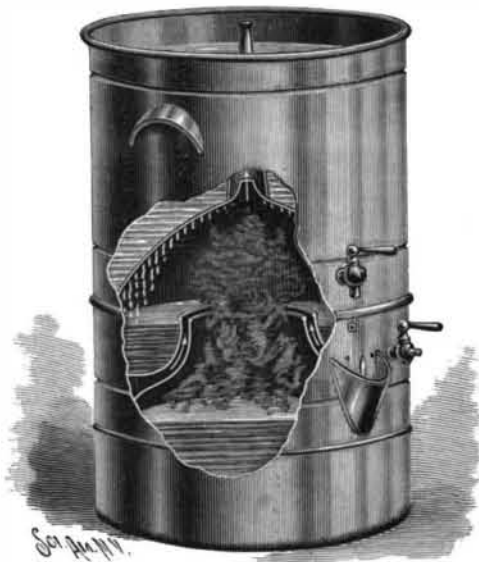
This construction enables the jaws to be screwed securely upon a nut. The long crank-arm, by reason of its great leverage, enables the nut to be started readily, the wrench being in the meantime held in position by the steadying handle. After the nut has been started, the wrench may be easily revolved by means of the handle on the long crank-arm.

Ribs or partitions extend across the jaws, stiffen the members and form a gripping surface, so that the wrench may be used as a vise. It is to be observed that the body of the wrench is formed of two pieces only. This enables the parts to be cast directly in a mould, so that they will fit together without the necessity of machine work.

THE RALSTON WATER-STILL.

Chemists tell us that the food which we take into our bodies is composed, to a large extent, of water. It is, therefore, of paramount importance that the water which enters our systems should, above all things, be pure. But, in order to render drinking water palatable and free from all dangerous bacteria, recourse must be had to some apparatus which will remove the injurious substances.

An ingenious apparatus of this nature is made by the



"RALSTON" WATER-STILL.

Bailey Manufacturing Company, of 54 Maiden Lane, New York city, and is known as the "Ralston New Process Still." The essential parts of this still are a retort and a condenser. The retort constitutes the lower portion of the apparatus and contains the water to be purified. The steam generated in the retort rises and, coming into contact with the water-filled condenser above, drops off into an annular reservoir, as shown in our engraving. This rapid condensation produces a vacuum which causes air previously sterilized to rush into the condensing chamber in the direction indicated by the arrows. The purpose of this sterilized air is to drive off the volatile impurities and to supply oxygen to the condensed steam. The air enters at a feed-cup

shown on the outside of the apparatus, passes through steam contained in the sterilizing chamber, and emerges with its organic life destroyed to mingle with the products of condensation. Should the still be neglected for more than an hour, the water in the reservoir flows from an opening above the feed-cup, thus keeping the supply of water in the sterilizing chamber and retort constant. The most striking features of the apparatus are the means for sterilizing air, the inclosed reservoir protected from the contaminating action of the atmosphere, and the device for preventing the retort from boiling dry.

Prize Offered for Matches Without Phosphorus.

The Department of State has received a note from the Belgian minister, dated New York, June 7, 1898, stating that his government has offered a prize of 50,000 francs (\$9,650) for the invention of a match paste containing no phosphorus. A copy of the decree, giving terms, conditions, etc., is inclosed. A report on the same subject has also been received from Consul Roosevelt, of Brussels, under date of May 14, 1898. Mr. Roosevelt translates the important clauses of the decree as follows:

A.—The competition is international.

B.—Necessary conditions which paste and matches submitted to competition must fulfill are as follows:

The paste must offer to the action of shocks and frictions such a resistance that dangerous explosions may not be apprehended during the process of manufacture. It must not contain any matter which by its emanations or otherwise may be dangerous during the process of manufacture to the health of the workmen.

The matches must ignite on any surface (even on cloth). Submitted to alternatives of humidity and dryness of heat and cold, in the average limits, they must sufficiently maintain their capacity to easily ignite and not be subject to spontaneous decomposition.

The matches, when struck, must not throw off any substance of a nature to burn persons or provoke fires. They must not discharge toxic fumes. Preference will be given to matches the paste of which does not contain any poisonous ingredient. These matches must also not be susceptible to friction, so that under ordinary conditions they will not easily ignite in the consumer's pocket, and that they may be transported and stored without danger in packings commonly employed in this trade.

C.—Inventors are admitted to competition until January 1, 1899, under the following conditions:

1. They should send, under sealed envelope, a communication giving name, Christian name, and residence, as well as such device as they may have adopted, which will be reproduced on the sample boxes mentioned in 2 and 3.

2. They should furnish 250 grammes (0.55 pound) of paste in a moist state. This paste will be contained in a glass bottle with a ground-glass stopper placed in a sheet iron or tin receptacle kept in a wooden box, of which the sides shall be at least 2 centimeters (0.7874 inch) thick. Between the sides of the box and the bottle there must exist on all sides a free space of about 3 centimeters (1.1811 inches) completely filled with elastic matter, such as straw, hay or wood wool.

3. They should furnish 10,000 matches at least, packed in pasteboard or paper boxes, containing at most 500 matches and bearing upon each box the adopted device. These boxes will be inclosed in a tin case, hermetically soldered all around to protect the matches from external dampness. The case must be packed in a wooden box, the sides of which shall be at least 1 centimeter (0.3937 inch) thick. Communications and packages will be addressed to M. Woeste, state minister, president of the committee, Department of Industry and Labor, No. 2 Rue Latérale, Brussels. These communications and packages can be forwarded any time from now until January 1, 1899.

D.—The inventors whose matches fulfill the aforesaid conditions under Title B will have to give proof that the industrial manufacture of said matches is practicable. They must pledge themselves to the manufacture of at least one million matches on Belgian territory, in some place designated by agreement between the inventor and the committee, and in the presence of the committee or a delegation of the committee.

Weather Stations in the Caribbean Sea.

As a result of the conference between Prof. Willis L. Moore, Chief of the Weather Bureau, Secretary Long, Secretary Wilson and the President, a recommendation will be sent to Congress for an appropriation for the establishment of signal stations at places in the West Indies and South America, in order to forestall the likelihood of danger to the United States vessels from the tropical storms which are frequent in the West Indies during the summer months. Gen. Greely, Chief of the Signal Service, has already secured observatories at Kingston, Mole St. Nicolas and other places. It is proposed to establish signal stations at all important places on the Caribbean Sea. Expert observers will report the conditions to Washington, and

dispatches containing information will be sent to Admiral Sampson, Commodore Schley and other commanders. This will be a wise precaution on the part of the government, as these storms are very severe and more to be feared than Spanish guns.

CAR-SEAL BREAKER.

An instrument has recently been patented by Thomas A. Lyendecker, of Laredo, Tex., which is designed to facilitate the operation of breaking car-seals. The tool, as shown in our illustration, has two legs extending parallel to each other and forming an obtuse angle with the handle. The upper and longer leg is



LYENDECKER'S CAR-SEAL BREAKER.

flat, and is formed with a roll at its outer end which constitutes a fulcrum for the tool.

In order to break a seal, the lower leg is engaged with the inner side of the seal, so that a portion of the seal will be received between the two legs. The upper long leg being now in engagement with the side of the car, by drawing the handle outward and downward, the seal will be broken. During this operation the tool swings on the fulcrum formed by the roll.

The instrument is particularly adapted for use in connection with "keystone" seals, although, as the engraving shows, it may be used with the ordinary disk seal.

AN IMPROVED COVER FOR MILK-CANS.

A milk-can cover has been patented by Elmer E. Harvey, Dolington, Pa., which is designed to permit thorough ventilation of the milk while cooling, so as to avoid the disadvantages incurred by hermetically sealing the can while the milk is still warm. The cover also permits the can to be sealed ready for shipment after the milk has cooled. Of our illustrations, the larger is a perspective view of the entire cover and the smaller a perspective view of the ventilating and sealing closures. The cover is provided with a stopper or



A NEW MILK-CAN COVER.

cylindrical main portion surmounted by posts which support a convex shield slightly overhanging the side edges, so as to shed rain away from the stopper. In the top of the stopper is an opening surrounded by a guideway on three sides, in which a ventilating and a hermetic closure may slide. The former closure is made of gauze and the latter is composed of a single metallic plate, both being rigidly connected by bars. By sliding the ventilating closure into the guideway, the orifice is covered so as to exclude dust, yet permitting the circulation of air. By reversing the frame composed of the two closures, the metallic plate constituting the hermetic closure will seal the can. The closures are kept in position by means of a spring plate attached to the stopper at the rear of the guideway.