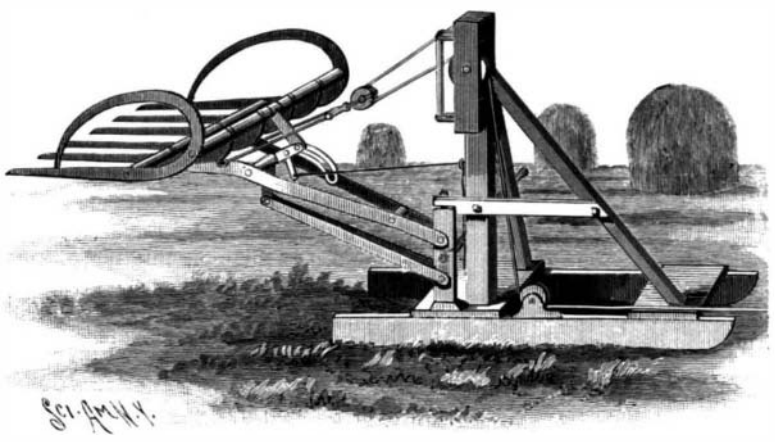
A NEW HAY-STACKER.

The illustration presented herewith represents a novel hay-stacker, the invention of Roddy C. Coble, of Marion, Kan. The stacker is provided with a base upon which there is mounted an upright and a post which may be swung by means of a bar normally locked by a foot-operated gravity-latch acting in conjunction with a keeper. Arms are pivotally attached to the swinging-post, and to the outer ends of the arms a fork is pivoted so that it can be swung up and down. A lock is pivotally connected with the fork in order to secure the fork in normal position when filled with hay. Between the arms an angle latch lever is pivoted



COBLE'S HAY-STACKER.

which coacts with the lock. Links pivotally connect the angle latch lever with the swinging-post to permit the coöperation of lock and lever. Mounted upon the angle latch lever is a releasing-lever, which can be operated by a cord to unfasten the lock and angle lever in order to permit the fork to assume its dumping-position. The fork can be raised and lowered by means of a rope which is secured at one end to the upright, is reeved through a pulley connected by a bail with the fork and through guide-pulleys in the upright and base, and is secured to a winding-drum.

When it is desired to transfer hay from one spot to another, the fork is carried to its lowest position in order to receive its load. After having been loaded, the fork is raised by means of the winding-drum. As the fork is carried upward its teeth will maintain a horizontal position, owing to the pivotal connection between the lock and the fork, between the angle lever and the lock, and between the angle lever and the links. After the fork has reached the desired elevation, the operator swings it by means of the bar previously mentioned, the gravity latch having first been released from its keeper. The fork having been swung over the desired spot, the releasing lever is operated to unfasten the lock, thus causing the fork automatically to assume its dumping position by reason of the weight of the hay. After having discharged its load, the fork returns by gravity to its normal position, and may then be returned for a new load.

THE BUNDY ACETYLENE GAS LAMP.

Since the first use of acetylene gas lamps on bicycles, numerous improvements in construction have been made in the direction of safety and convenience. Many of the improvements contributing to the desired end are found in a lamp made by the Frank E. Bundy Lamp Company, of Elmira, N. Y.

The lamp consists of the customary generating and water chambers. The generating chamber occupies the lowermost portion of the lamp, and in it is inclosed a cartridge, which is termed a "carblot," shown in the engraving. This carblot is of novel construction and is made so that the water does not come in contact with the carbide. The cartridge is divided by means of blotting paper into a series of annular carbide cells surrounding a longitudinal central passage through which water is precipitated. The blotting paper absorbs and conducts this water to the various carbide cells, thus obtaining that uniform and slow generation of gas necessary for the production of a good light.

The construction of this cartridge, furthermore, enables the operator to relight his lamp with the same cartridge many times. The blotting paper being used as an absorbent and as a distributer of moisture when the water is turned into the water column, also acts as an accumulator of the moisture after the water is turned off, and the heat, which is produced by the action of the moisture on the carbide, dries the blotting paper, and the blotting paper, in turn, absorbs the moisture from the exhausted ash and leaves the balance of the carbide perfectly dry, thereby doing away with the objectionable odor after the light has died out and preserving the balance of the carbide in the carblot.

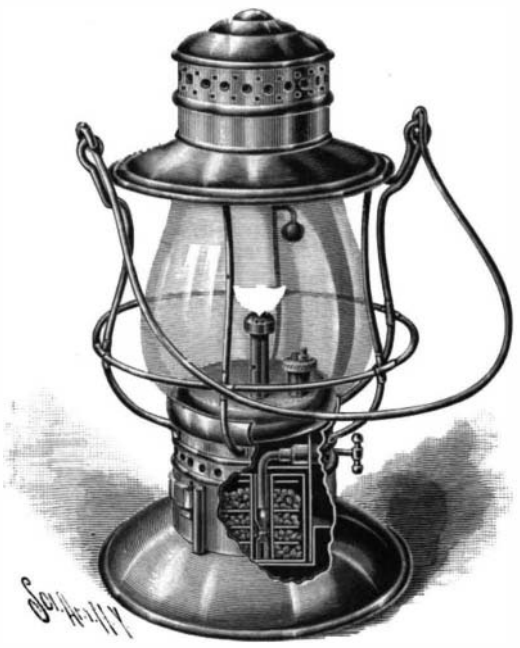
The water chamber is located above the generating chamber, with the water completely surrounding the gas tube. The water is supplied to the carbide by a supply pipe entering the central passage of the carblot. A needle valve, operated by an exterior handle, controls the supply of water. The water is also automatically controlled by a small check valve, which operates when the gas pressure becomes greater than the weight of water in the water chamber.

To dry the gas, which is necessary after generating it with moisture, a neat device in shape of a felt plug is provided, which is screwed into the gas tube, and through which all the gas is forced before it enters the gas tube. The gas tube is made in such a manner that it forms a miniature gasometer. The water in the water chamber cools the gas before it reaches the burner, thereby supplying the burner with a dry, cool gas, which gives a bright, white light.

When it is desired to use the lamp, the water chamber is first filled by means of a short filler tube, shown in the cut. The gas-generating chamber is unscrewed and the carblot placed in the carbide receptacle. After the generator has been replaced, the needle valve is opened to supply the water to the carbide. The gas generated rises, passes through the gas tube, and is then ignited.

In addition to the making of bicycle lamps, the manufacturers of the lamp described have also constructed a lantern which burns acetylene instead of oil. The generating apparatus is, in every respect, similar to that employed in the bicycle lamp; and the lantern itself presents the same general appearance as an ordinary oil lamp, over which it is so marked an improvement.

BUNDY ACETYLENE BICYCLE LAMP.



BUNDY ACETYLENE HAND LANTERN.

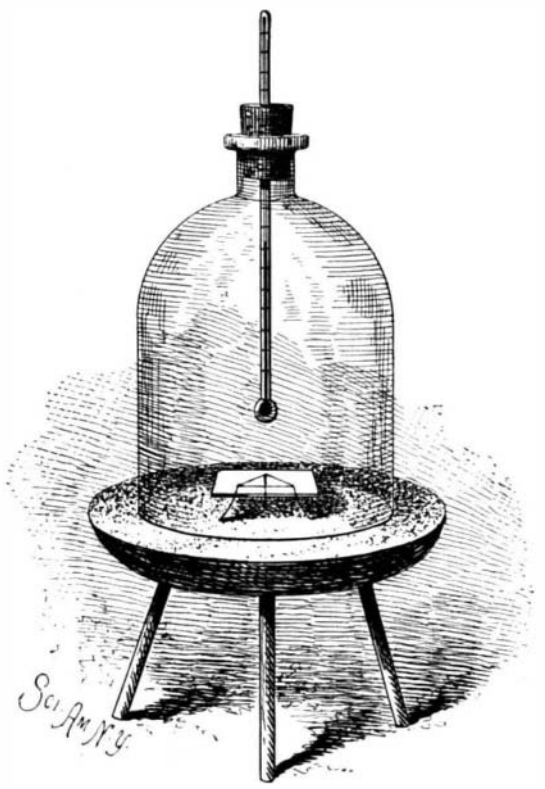
Paris Exposition Appropriations.

The secretary of the United States Commission to the Paris Exposition reports: "The exact amount of the appropriation by Congress for the Paris Exposition is $1.210.000. As the original appropriation was $650,000, this is an increase of $560,000. Of the amount appropriated, $200,000 will be expended on the United States buildings and $150,000 will be used in the display in the Agriculture and Horticulture Department. "Commissioner-General Ferdinand W. Peck has been indefatigable in his efforts to secure this appropriation from Congress, and because it is about $250,000 less than what he expected, he has issued instructions to use the utmost economy in all departments, and will cut off the expense in every direction." This will be necessary to make a display creditable to the United States.

A CHEAP FORM OF AIR-BATH.

BY PROF. RICHARD K. MEADE.

Those of the Scientific American readers who have occasion to use an air-bath will find the form described below not only cheap but very convenient, as it possesses many points of superiority over the copper or metal oven, and it is fast replacing the latter in chemical laboratories and workshops, where an oven is desired which does not corrode when substances are heated in it which give off acid fumes. The original design was one by Habermann. In his form he used a



A CHEAP FORM OF AIR-BATH.

bell jar. The writer has modified this, reducing the cost of the bath to a minimum.

Select a large glass bottle and cut off the lower part. This may readily be done by making a mark across the bottle at the proper point with a file and then wrapping two strips of wet paper entirely around the bottle, one a little above and one a little below the mark. If the bottle is revolved slowly and evenly and a small blowpipe flame is made to play on the space between the wet strips, a crack will start which may be led around the bottle by the flame. The sharp edges should be rounded with a file dipped in turpentine. A narrow strip of asbestos wound around the neck will form a convenient handle.

This extemporized bell jar is placed upon a sand bath or a ring of asbestos paper upon a sheet iron pan or iron plate. The sand bath, pan, or plate is held above the flame by a tripod. The object to be heated is placed upon a piece of glass or porcelain raised above the sand bath by a wire bent in the form of a small tripod. If it is desired to regulate the temperature, a thermometer is thrust through a cork in the mouth of the bottle. Large grooves should be cut lengthwise along the side of the cork in order to allow the free escape of the steam or vapors; in fact, there should be just enough cork to hold the thermometer in place.

The "Oceanic" and the Steel Trade.

The Iron and Coal Trades Review, published in London, recently had the following paragraph:

It is hardly satisfactory to reflect on the fact that although the "Oceanic"—the mightiest monarch of the ocean up to the present time—was built in our own country, with British labor, British skill, and British resources generally, for a British line, a part of the steel used in her vast structure was of American origin, a good deal of steel, in the form of plates, having during the last year or two been imported into Belfast. As the total weight of the ship, with cargo, stores, fittings, etc., is computed at 28,500 tons, the quantity of steel and iron used in her hull, machinery, etc., is not likely to be less than 20,000 tons. If the Oceanic" were to be duplicated every week, it would obviously be a good thing for the iron and steel trades.