

IMPROVED GATE.

The annexed engraving shows an improved gate recently patented by Mr. W. H. Marshall, of Oxford, Miss. This gate is intended to resist the various causes which tend to throw it out of adjustment, so that the latch will always work properly no matter if the distance between the gate and latch post varies or if the gate or posts get out of position.

The stile, A, at the swinging end of the gate, is recessed to receive the catch, D, projecting from the gate post, E. The catch, D, consists of a vertical plate provided with a horizontal flange upon which there is a T-headed rib for receiving the latch, F; at the upper side of the recess in the stile, A. This latch slides vertically in a guide, J, attached to the stile, and has a curved recess, G, for receiving the head of the catch, D. The latch, F, has inclined arms, H (Fig. 3), which are engaged by the catch, D, as the gate is closed, and raise the latch so as to bring its recess, G, on the head of the catch. The latch is formed so as to engage the T-head of the catch when an attempt is made by hogs or cattle to open the gate, so as to prevent the gate from being raised and thrown off the hinges. The hinge stile of the gate is tapered from bottom to top, and to it is secured a tapering filling piece, L, that fills the space between the stile and the hinge post, M, and prevents the passage of chickens and other small animals.

The shank of the upper hinge extends through the tapering stile, and is provided with a wing nut by means of which the shank may be drawn in or let out to compensate for any sag in the gate or inclination of the post. The construction of the lower hinge is clearly shown in Fig. 4.

These improvements seem to avoid the troublesome features of ordinary gates and render the gate always operative.

The Teeth of the Yakuts.

The *Herald* correspondent with the party in search of the lost crew of the *Jeannette* finds among the natives of northern Siberia the "most beautiful teeth in all the wide world." He says:

"Three hundred versts from Yakutsk I have seen old men of sixty and seventy with sets of teeth small and pearly white and polished and healthy as those of the handsomest American girl of sixteen. Decay and suffering and unsightliness and loss are actually unknown. A physician of Yakutsk tells me that he believes the reason of this phenomenon is to be found in the habits and the kind of food eaten by the natives, as well as to a certain care taken by them from childhood up. In the first place, the Yakuts do not touch sugar in any form, for the simple reason that they cannot afford to purchase it. Secondly, they are in the habit of drinking daily large quantities of fermented sour milk, summer and winter, which is antiscorbutic and is very beneficial in preserving the teeth. And lastly, they have the habit of chewing a preparation of the resin of the fir tree, a piece of which, tasting like tar, they masticate after every meal, in order specially to clean the teeth and gums of particles of food that may remain after meals. The gum or resin is prepared and sold by all apothecaries in Siberia, and is much used by Russian ladies. The fermented milk is said to be a not very savory drink. First, the milk is cooked and then put into a large vase-shaped utensil made of frozen cows' dung, in which it is allowed to ferment until the winter, when it is broken up into blocks and preserved for use in the cellars all the year round."

GAS EXHAUSTER.

We illustrate one of a pair of exhausters manufactured by Messrs. W. H. Allen & Co., London. These exhausters are an improvement on what is known as Beale's patent, a machine which has been more used in gasworks than any other for exhausting and forcing gas. The improvements of Messrs. Allen consist in making the segments of cast steel with an internal face, so that the gas is prevented from entering the segment—as in the old form—and escape in this direction is thus avoided. By increasing the size of these segments and decreasing their weight, so that the centrifugal force does not come into play, a considerable amount of friction is dispensed with, and scarcely any heat is generated. Some machines of the old form have been known to increase the heat of the gas 10° or 12° in passing through the exhausters only; but in this new form the heat is increased very little. Another im-

provement consists in making the slide pins of extra large size, and so reducing the wear on these important parts. The exhauster, as now made by Messrs. Allen, is nearly balanced in every way, so that there is an equal strain throughout. The exhauster is combined with, and driven by, a direct acting steam engine, with double crank and fly wheel on the opposite side. The engine is fitted with a very simple, yet effective, single slide expansion valve, and altogether the arrangement is very neat and compact, and as the whole of the working parts, including crank, connecting rod, and crosshead, with their bolts and

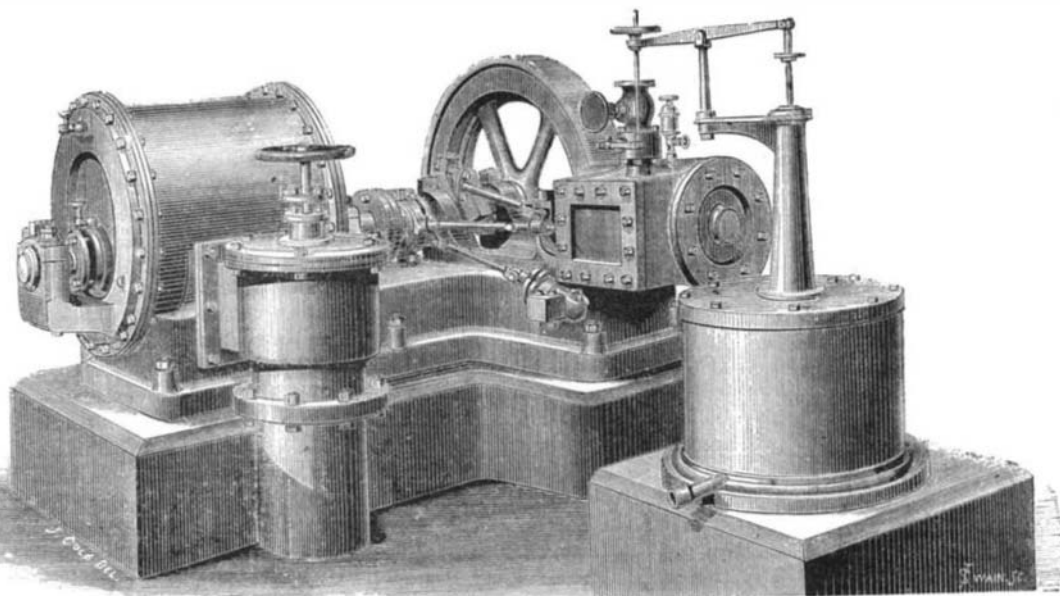


MARSHALL'S IMPROVED GATE

nuts, are made of steel, the lightness of their parts, with the beauty of workmanship, gives them an excellent appearance. The engines are regulated by a hydraulic governor directly on the engine, as shown. These exhausters are capable of passing 50,000 cubic feet per hour against a pressure of 74 in. of water.—*The Engineer.*

The Candle Tree.

The tallow tree, or, as it is sometimes called, the "candle tree," a native of China, which for a century or more has



IMPROVED GAS EXHAUSTER

been used as a popular shade tree in the principal cities of the Southern States along the coast, is now creating some attention in California, as it is thought that tallow can be obtained from these trees cheaper than the illuminating oils at present used in lighthouses and elsewhere. In its native country the seeds and pods of the tree are bruised and then boiled, causing a kind of tallow to rise to the surface, which is much used in the manufacture of candles. The colored candles used in the decorations of our Christmas trees are said to be made from this wax.

Skin Grafting from Rabbits.

Dr. Lamallerée, of Paris, several months ago, performed an operation of skin grafting, employing grafts obtained from two different sources, a human being and a rabbit, those from the latter evincing a superior amount of vitality. The patient, a man thirty-seven years old, had suffered for six years from a varicose ulcer of the left thigh, which resisted every form of treatment. The ulcer was 14 centimeters long and 8 deep. At the request of the patient, Dr. Lamallerée determined upon skin grafting, for which he obtained six grafts from the abdomen of a rabbit, it having been previously shaved, and two from the forearm of a man. These having been placed in position, a Lister dressing was applied. After the lapse of eight days this was removed, and it was found that those furnished by the rabbit had become adherent, and that new skin was forming rapidly in their immediate neighborhood. On the other hand, the two which had been taken from the man had not adhered. The dressing was continued eight days longer. When it was removed an islet of skin, 10 centimeters long and 7 wide, was seen to have established itself upon the center of the ulcer. The dressing was again reapplied, and maintained *in situ* for eight days, at the completion of which it was taken off, and it was found that the sore had completely cicatrized. Two months later the patient was again seen, the healing process was progressing favorably, and the newly formed skin showed no trace of its origin.—*Dr. E. C. Vidal, in Monthly Review of Medicine.*

A Dangerous Cigar Lighter.

Street hawkers have lately taken to selling a "magic cigar lighter," which is calculated to do much mischief. As every student knows, the affinity of sodium for oxygen is so great that it will take the coveted element from water with such rapidity as to cause it to burst into flame. The new lighter is a thin strip of sodium, a fragment of which when placed on the end of a cigar and touched with water, burned with great vehemence.

Few of those who buy the little vials of lighters are aware what vials of wrath they may turn out to be if unskillfully handled. The burning sodium will make an ugly wound if it comes in contact with the skin, which is likely to happen from the sputtering way it has. A sweaty finger is enough to set the stuff ablaze, or a sweaty pocket, should the cork of the bottle chance to come out. As the lighters are bought chiefly by the ignorant, who are taken by the seeming miracle of producing fire by the direct action of water, it is a wonder that no serious accidents with them have been reported. The traffic is not one to be encouraged.

A New Baking Powder.

V. Krehon, in Austria, has invented a baking powder which is made of 180 parts of crude alum, 75 parts of bicarbonate of soda, and 50 parts of the "less basic" phosphate of lime. This last ingredient, which is denominated "less basic phosphate," is the product obtained by pouring ten per cent hydrochloric acid on an equal weight of bone meal burnt white. On pouring water upon this baking powder carbonic acid is formed and sulphate of soda and potash, while the alumina separates. The alum is completely decomposed, so that the inventor considers it harmless. One ounce is sufficient for 1½ pounds of flour.

Sun Spots and Great Storms.

Professor Couch, of Des Moines, Iowa, advises those living in exposed places to provide cellars or caves of refuge for shelter when the sky looks threatening in the southwest. He says that 1882 is the maximum year of the 11-1 years sun spot period, and also the maximum year of two other periods—a long

and very long period; and the same degree of energy that gives the maximum sun-spot period also gives the American continent maximum rainfall and a marked degree of force in the effects of its storms; and the end is not yet.

To starch collars, cuffs, etc., so that they will be stiff and glossy as those bought at furnishing stores, add to one quart of the well boiled (corn) starch three ounces of water glass, one ounce of gum arabic, and two ounces of loaf sugar. Use a polishing iron.