SCIENTIFIC AMERICAN

[Entered at the Post Office of New York, N. Y., as Second Class Matter.]

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY AND MANUFACTURES.

Vol. XLIII.—No. 1. [NEW SERIES.] NEW YORK, JULY 3, 1880. [$3.20 per Annum. [POSTAGE PREPAID.]

AGRICULTURAL INVENTIONS.

Mr. Sterling A. Millard, of Clayville, N. Y., has invented a scythe blade that contains much less weight of metal and possesses equal or greater strength than the ordinary scythe blades. It is made in the usual manner from what is termed by scythe makers a "scythe rod," and is wrought and shaped in such form that a proper thickness is left to serve as the back of the blade. A longitudinal auxiliary rib or supplementary back is formed on the blade, which stiffens the scythe without requiring the same weight of metal as those of the usual construction.

Mr. George C. Winslow, of Kalamazoo, Mich., has patented an improvement in spring harrow teeth, which consists generally in hinging the harrow tooth in the forward end of a rectangular frame bolted to the harrow bar, and combining therewith a spring, which at its back end is clamped to the harrow bar by the same bolts which secure the rectangular frame, and which spring then curves upward and forward, and then down through the slot or opening of the rectangular frame, and is jointed at its extremity, near the bottom of the harrow tooth, so that its tension serves to throw the harrow tooth forward, but allows it to yield to obstruction.

A Rare Specimen Lost.

Captain Ingalls, of the schooner Chalcedony, has let slip an opportunity to make a small fortune and at the same time settle the long vexed question as to the reality of the elusive and possibly mythical sea serpent. His story, as told in the *Argus*, of Portland, Maine, June 8, runs as follows:

"Last Saturday, about one o'clock in the afternoon, we were slowly sailing past Monhegan, there being very little wind, about twenty miles southwest of the island, when we caught sight of what looked like a large schooner floating bottom up. As the object lay almost dead ahead, we made directly for it, but before we got very close a Cape Ann schooner lay to and sent a boat's crew to inspect what now plainly appeared to be a monstrous carcass of some species or other. We finally hove to, about a ship's length off, and took a leisurely survey of the thing. It was dead, and floated on the water, with its belly, of a dirty brown color, up. It head was at least twenty feet long, and about ten feet through at the thickest point. About midway of the body, which was, I should guess, about forty feet long, were two fins, of a clear white, each about twelve feet in length. The body seemed to taper from the back of the head down to the size of a small log, distinct from the whale tribe, as the end had nothing that looked like a fluke. The shape of the creature's head was more like a tierce than anything I can liken it to. I have seen almost all kinds of shapes that can be found in these waters, but never saw the like of this before.

Two years ago, off Seguin, I saw shooting through the water a thing which, I think, resembled this creature considerably, but I didn't get close enough to it to say for certain. The men from the Cape Ann schooner got on this dead creature, and one of the boys cut a double shuffle on its belly, which for all the world looked like the bottom of a schooner covered with barnacles and seaweed by the weather. We should have towed the thing to Portland had there been any wind, but as there wasn't, we steered away and left it. What sort of a sea monster this was I can't say for sure, but in my opinion it was the original 'sea serpent,' which has been seen once in a while for years past, and which, when alive, was too swift a swimmer for any sailing vessel to get alongside of."

The report of the captain of the "Cape Ann schooner" will be in order now.

SIMPLE AND CHEAP PROCESS OF GAS MAKING.

When a current of air is passed over the surface of gasoline it becomes carbureted or charged with its vapors to saturation. Air thus charged is somewhat heavier than pure air, and when passed through an Argand or bat's wing burner, it burns with a brilliant white flame. Nothing would seem easier than to make a machine that would force a current of air through, over, or on some material saturated with gasoline, and this apparently simple process has led many into attempts to make a successful gas machine. Many fortunes have been spent by the unscientific in the chase after this, to them, *ignis fatuus*. The stumbling block which has wrecked so many enterprises in this line has been the cold produced by the evaporation of the gasoline. One pound of gasoline, in passing from a liquid to a vapor, requires about as much heat as would be required to melt two pounds of cast iron. It is therefore obvious that where no heat is supplied, the gasoline, air, and machine must soon become very cold when any considerable quantity of gas is being made. The heat must come from somewhere, and as none is supplied, it is taken from the apparatus, air, and gasoline, making them very cold. A beautiful and simple experiment to illustrate this refrigeration can be made as follows: Place a gill of water in a common washbasin, then pour over it one pint of light gasoline; shake the basin, and blow the liquids vigorously, when very soon the basin will become intensely cold—the water will freeze, and may be taken out in the form of a snowball. If the water and basin are hot, and the experiment performed in a hot room or in the sun, it is much more striking.*

This refrigeration operates upon the gas as follows: Air will take up and hold in suspension any volatile liquid in proportion to the square of its temperature, so that when the temperature of the gasoline and air have fallen off one half, the quantity of gasoline in the air has fallen off three quarters, and the light is destroyed. The quality of the gas in such machines varies from a rich smoky flame to a pale blue and blowing flame in a short time. Every change of quality in the liquid, temperature of the apparatus, or number of burners used causes a vexatious change in the quality of the gas. If heat is applied at the right time and in the right quantity it is not so bad, but too much heat, or neglecting to regulate it properly, converts the machine into a still, the condenser of which is the pipes of the building lighted, when danger is added to vexation. About ten years ago a machine was illustrated in these columns that obviated all these troubles; it was the invention of the well known mechanical engineer, Hiram S. Maxim, of this city. His machine was on an entirely new principle, and has since gone into general use. It was intricate and somewhat expensive, but it performed its work well. Messrs. A. T. Stewart & Co. use them largely in their mills and hotels. Mr. Maxim made one of six thousand burner capacity for the Grand Union Hotel, Saratoga Springs, it being the largest gas machine ever built. It has supplied gas of an unvarying quality for six years, and is as good as new to-day.

To reduce the cost as far as possible, Mr. Maxim has designed a new machine on another principle, which we herewith illustrate. Fig. 1 shows the machine in perspective, and Fig. 2 is a sectional view. The vertical cylinder is a common gas holder of sheet brass. It is 36 inches in diameter for a thousand burner machine. The operative parts of the machine are best shown in the sectional view, which represents the portion of the machine called the injector. A is a steam chamber supplied with four or more pounds of steam through the pipe, K. B is the gasoline supply pipe, and C the air supply. D is an index valve. The operation is as follows: Steam being in the chamber, A, the descent of the holder opens the valve, M, and allows the steam to

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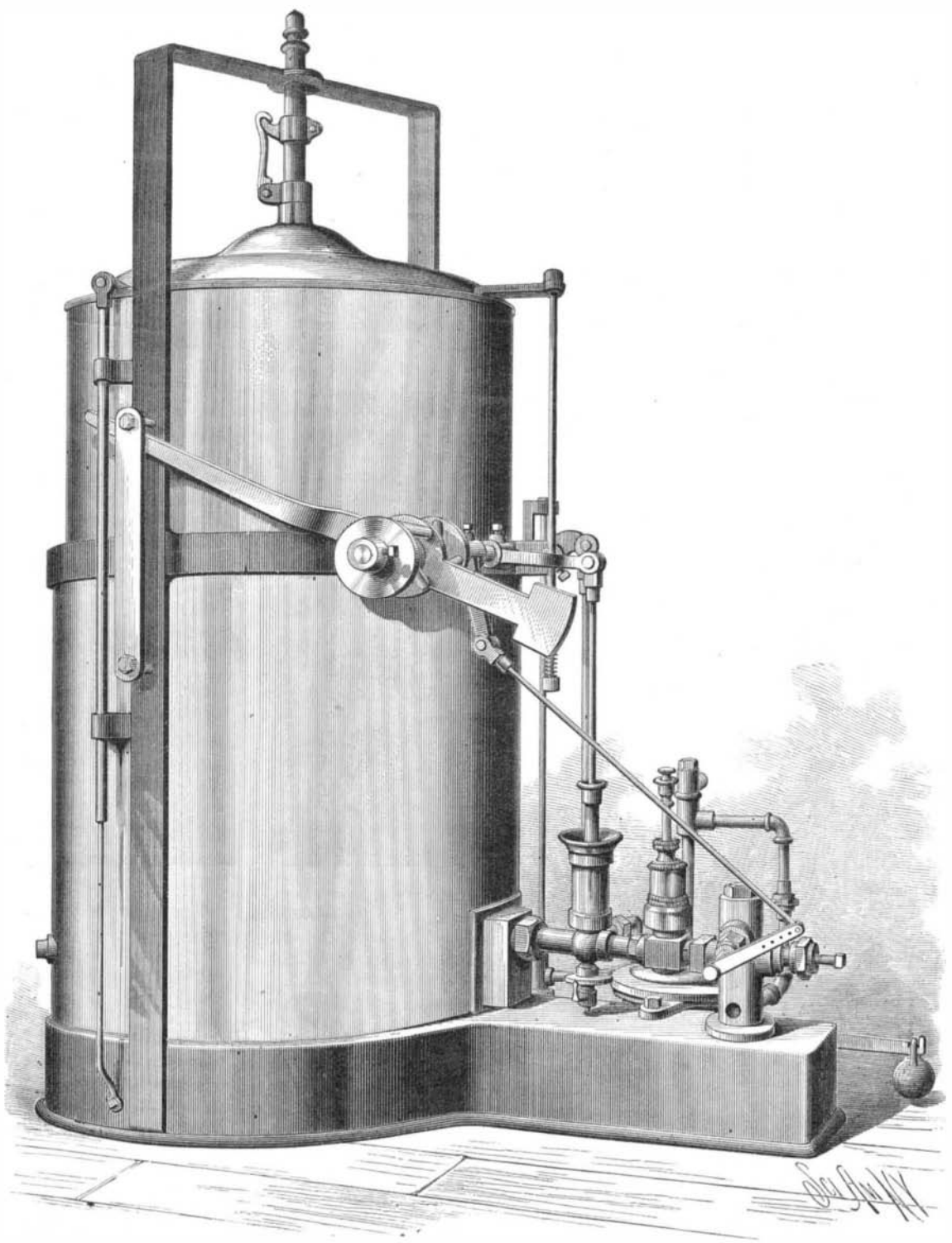


MAXIM'S NEW GAS MACHINE.

* This experiment should not be tried in the vicinity of a gaslight or fire.

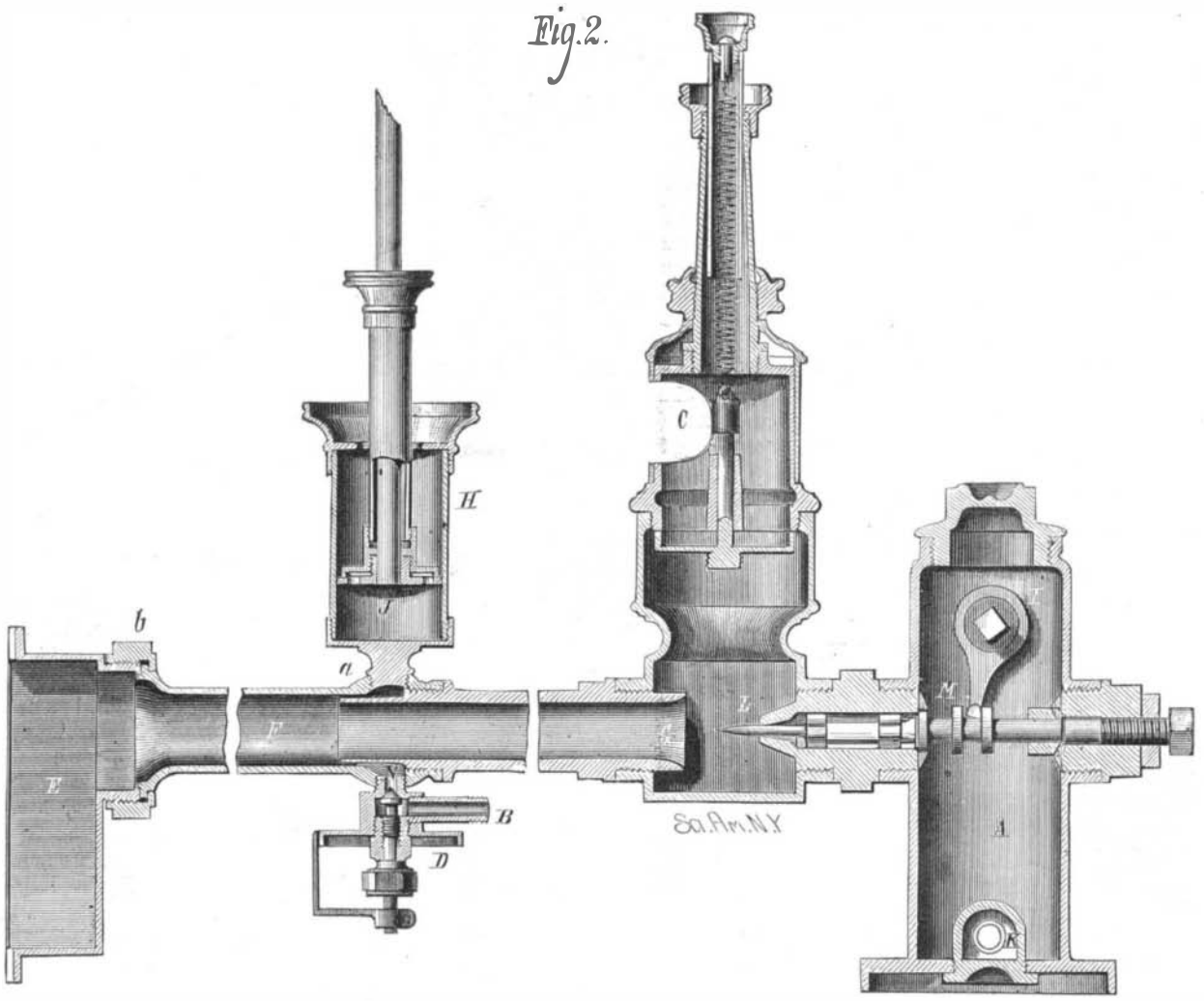
MAXIM'S NEW GAS MACHINE.

[*Continued from first page.*]

escape through the jet, L. This produces a partial vacuum at L, and draws air in at C. The air and steam pass with great rapidity through the tube, G. The action of the air and steam produces another partial vacuum at N, which draws gasoline in through the pipe, B. The adjustment of the opening is such that one pound of steam draws in air sufficient for two pounds of gasoline. Theheat of the steam is taken up by the refrigeration caused by the evaporation of the gasoline, so that at E the compound is carbureted air and cold water. The tube, F, presents the curious phenomenon of being hot at *a* and cold at *b*. In one short piece of tube we have a hot retort and a cold condenser. The supply of gasoline is regulated by the valve, D. The dash pot, H, prevents a too rapid action of the valve, I. Gas of any desired density may be made, and when once adjusted the gas does not vary. The burner used with this machine is made to produce the very best results attainable, and then the gas is regulated to a density and pressure to suit the burner. The nuisance of an adjustable burner is thus obviated.

The holder closes off the supply when full, and lets on a supply when nearly empty. Gasoline has been much improved within a few years. It is now so very cheap that the equivalent of one thousand feet of coal gas of standard quality may be equaled for sixty cents. Where no steam is at hand these machines are run with a small oil burner. They are being made by the Pennsylvania Globe Gas Light Co., 131 Arch St., Philadelphia, Pa., of from 100 to 10,000 burner power.

This machine was patented June 8, 1880.



MAXIM'S GAS MACHINE—SECTION OF INJECTOR.

PREVENTION OF BOILER EXPLOSIONS.

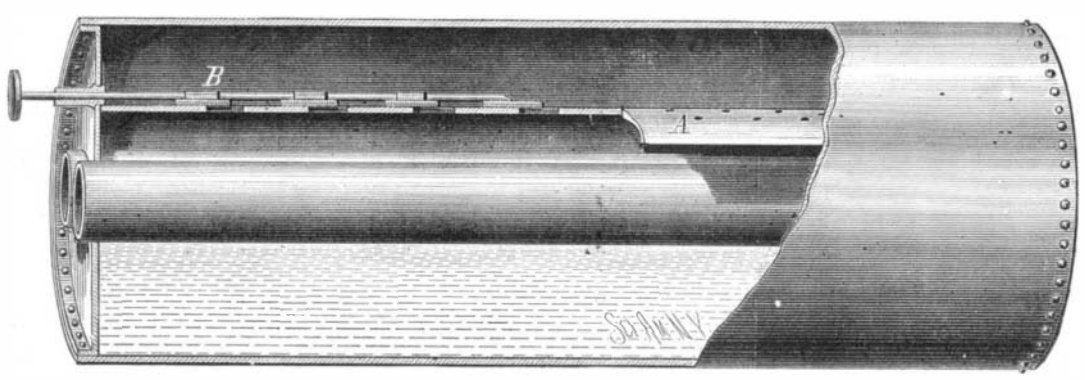
This vexed problem has occupied the minds of engineers and inventors since the introduction of steam as a motive power, and there are several theories of boiler explosions, each having its adherents. Of course there are conditions under which a boiler explosion is involved in no mystery; as, for example, when the water is dangerously low, when the safety valve is of insufficient capacity, or when it is unduly loaded; but there are other cases where an explosion cannot be rationally explained in the light of the well known theories.

Mr. Daniel T. Lawson, of Wellsville, Ohio, has recently patented, in this and several other countries, a device for preventing boiler explosions, which appears practical, and according to the testimony of scientific men the claims of the inventor are well founded.

The inventor, in explaining his invention, says that when water is superheated it becomes as explosive as gunpowder, exploding by bursting into steam from a reduction of pressure. When the engineer opens the throttle valve the cylinder is instantly filled with steam, creating a vacuum to that extent in the boiler. The superheated water then immediately rises to fill the vacuum, and is met by the valve, instantly cutting off the escape into the cylinder; this causes a concussion on every square inch in the boiler much greater than the regular pressure of the steam. There is abundant reason to believe that it is this concussive action which causes the numerous and mysterious boiler explosions, and which cause is wholly independent of the amount of water in the boiler; in fact, the greater the amount of water in the boiler the more terrific the explosion.

This invention, which is based upon this theory, consists in reducing the concussive strain produced by the impulsive and intermittent escape of steam to the cylinders to an approximately uniform pressure, by rendering the evolution or passage of steam from the water to the steam space approximately constant and independent of the intermittent discharges from the steam space to the cylinder. The means for accomplishing this consist in a boiler constructed with a partition, A, intervening between the water space and the space from which the steam is taken to supply the cylinder, and feeding the steam as it is generated through valves or orifices. B, in the partition, of a smaller size than the port or opening through which the steam passes into the cylinder. By this means the normal steam pressure or steam supply, when thus intermittently or alternately reduced, is restored gradually by reducing the flow from the water space to the steam space, so that the transformation of water into steam is made approximately uniform in spite of the intermittent escape of steam through the cylinders, and the boiler is thus relieved of the constant wear and strain of the concussion.

In supplying steam from the water compartment to the steam compartment, the inventor intends using a number of small perforations, not amounting in the aggregate to more than about one twentieth the size of the cylinder port, in connection with a number of small valves to be under control of the engineer, so that the amount of steam required can be readily regulated, yet carefully avoiding the possibility of all, when opened to their utmost capacity, forming as large an opening as the valve through which the cylinder is supplied. A number of small valves and perforations in the partition sheet between the water and steam compartments, will remedy that hitherto very general annoyance of water rising to and through the valves, which is occasioned by pressure of steam upon the surface of the water, and when *one large* valve is opened, the pressure is partly removed from the water immediately under it, consequently the water rises through the valve. A number of small openings for the liberation of steam from the superheated water will remedy this difficulty.



LAWSON'S IMPROVED STEAM BOILER.

MISCELLANEOUS INVENTIONS.

Mr. Niels C. Larsen, of Sacramento, Cal., has patented a purse or satchel fastening which can be securely locked and present a smooth and unbroken surface without projections.

A combined dental speculum and shield has been patented by Mr. Alfred W. Edwards, of New York city. The object of this invention is to facilitate the performance of dental operations, such as the filling of teeth. It consists in a combined dental speculum, gag, and shield formed of a flaring or bonnet-shaped shell of metal, having a longitudinal slot in its lower side to receive the teeth, and an arched wire attached to its lower part, upon the opposite sides of the forward end of the slot, to rest upon the teeth and support the forward part of the shell.

An improved coupling for the shafts of a wagon, which can be readily fastened to or unfastened from the axle, has been patented by Mr. William W. French, of Stockbridge, Mass. The invention consists in the combination with the axle clip and knuckle joint of a sliding bearer and spring catch to facilitate the opening and closing of the coupling.

Mr. Joseph Kintz, of West Meriden, Conn., has patented an improved process for bronzing iron surfaces, which consists in cleaning and buffing the iron surfaces, then electroplating with copper, then dipping in acid solution, then again buffing, then boiling in a salt of tin solution, and then finishing by subjecting the article to heat until the copper and spelter coatings are fused into bronze.

A simple device for extending the steps of passenger cars, for the convenience of passengers getting in and out of the car, and for protecting at the same time the treads of the permanent steps from sparks, cinders, snow, etc., during the passage of the car from one station to another, has been patented by Mr. Benjamin F. Shelabarger, of Hannibal, Mo.

Mr. Luther C. Baldwin, of Manchester, N. H., has patented a new and improved automatic heat regulator, simple in construction and so arranged as to operate, under the smallest changes of temperature, upon the valves of the source of heat.

An improved cigar lighting stand has been patented by Mr. Joseph Kintz, of West Meriden, Conn. This improvement relates to lamp stands for cigar lighting, and has for its object the production of a stand of ornamental character which may be packed closely for transportation and readily put together for use.

A simple, safe, and efficient device in which light oils may be used as fuel for heating sad irons for domestic use, or for the use of tailors, dressmakers, etc., has been patented by Mr. Harvey L. Wells, of Evansville, Ind. It consists essentially of an iron box divided longitudinally into two chambers, the lower being the combustion chamber and the upper the heating chamber.

An improvement in electric light has been patented by Mr. Charles J. Van Depoele, of Detroit, Mich. The object of this invention is to automatically regulate the feed of the carbon in electric lights according to the changes of resistance in the current caused by the consumption of the carbon points, so as to prevent flickering and variations in intensity of the light.