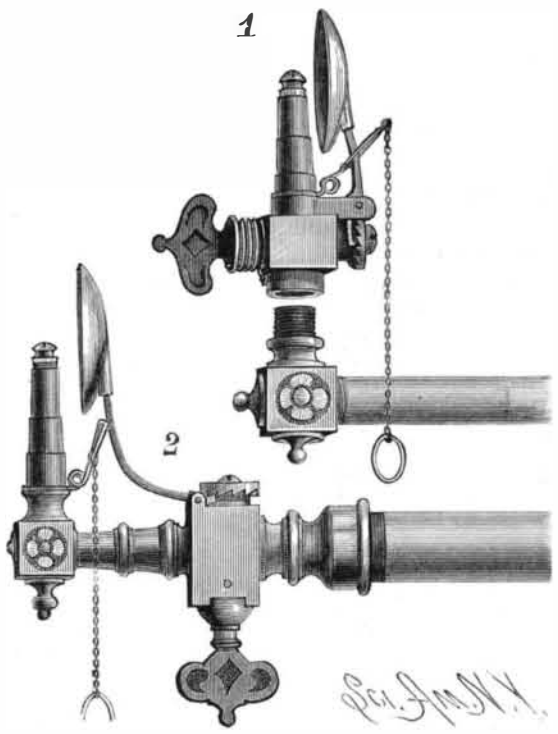
IMPROVED AUTOMATIC GAS BURNER.

The device herewith illustrated is designed to prevent all danger arising through the ignorance or carelessness of persons who blow out a gas jet. By means of a simple contrivance, which is reliable in its action and is operated by the force of the wind necessary to blow out the light, the cock is turned and the supply cut off. The engravings show the burner complete, and also show the improvement applied to an ordinary burner already in use. To open the cock for lighting the gas, the plug is turned in such a direction as to coil a spring secured to the plug and its box, when the plug is locked in place by the lower end of a curved lever en-



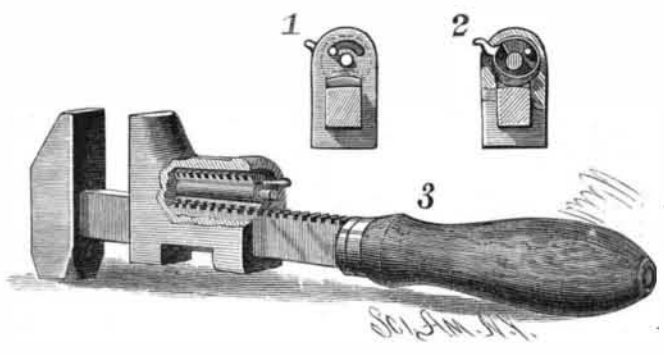
DOUTNEY'S IMPROVED AUTOMATIC GAS BURNER.

gaging with ratchet teeth formed on the end of the plug. When a person blows out the gas, the wind is caught by the concave wing carried by the upper end of the lever, the lower end of which is moved to disengage it from the teeth, thereby permitting the spring to uncoil and turn the plug so as to shut off the gas. The plug may also be released when desired by pulling the chain, which is arranged as clearly shown in the cuts. As the plug has a number of teeth, it can be locked when partly or entirely opened.

This invention has been patented by Mr. George Doutney, whose address is care of Doutney Bros., 439 Broadway, New York city.

IMPROVED WRENCH.

The shank of the wrench has a fixed jaw at its outer end, and is fitted with a sliding jaw, in the body of which, parallel with a shank, is a spindle pivoted in bearings at its ends. This spindle is threaded, so as to engage the rack teeth formed on the shank. At one side the threads of the spindle are removed, so that, when turned with the mutilated portion inward, the jaw can be moved easily on the shank. The spindle may be turned by a knob shown in the sectional view, Fig. 1, and also in Fig. 3. A semicircular spring is fitted in the jaw at one side of the spindle, and is pro-



GALE'S IMPROVED WRENCH.

vided with a catch at one end, which by engaging a notch on the spindle (Fig. 2) prevents its turning. To adjust the wrench, the end of the spring is pulled out and the spindle turned to bring its mutilated portion at the inside. The jaw can then be moved, and a partial turn of the spindle will cause its thread to engage the rack and lock the jaw in place.

This invention has been patented by Mr. Morgan Gale, whose address is care of American Consul, La Union, San Salvador, Central America.

IT is as much easier to find fault with what others do than it is to do something, as it is easier to ask than answer questions. In mechanical matters there is not much room for the man who can do nothing but object to the course of others. Fault finding, to some extent, is a negative virtue, but it ought to go along with a good deal that is positive.

Care of Pigeons.

Colonel Laussedat, in an address before the directors and keepers of the French military pigeon keepers, said:

"Cleanliness is an indispensable condition to the success of a pigeon crop. Each morning the keeper should remove the excrement from the shelves, perches, etc., using an iron scraper. He should also clear the ground with a rake, taking care to remove the feathers which accumulate in the corners and attract vermin, carefully leveling the sand which covers the floor. He should also, twice in the year, whitewash the walls and shelves, once near the close of October and again in April, in order to destroy the vermin as they begin breeding. I, however, prefer sprinkling them with petroleum, as easier to penetrate the crevices where vermin lodge. The feed bins should also receive attention, in order that the food for the birds should be kept dry and well ventilated, and thus not become heated. He should not hesitate to throw away musty grain rather than give it to the pigeons, as the maladies which result from such food would, in a very short time, depopulate the loft."

In Belgium the homing pigeons are fed on vetches and dried beans. This is undoubtedly the food best suited to the birds. They are given two meals a day, but a better plan is to place the food in a hopper, from which the birds can eat as they desire, because it sometimes happens that they will be forgotten, and in that case they will suffer from hunger and be retarded in growth. When the birds are feeding young, it is good to give them toward evening several handfuls of millet, of which they are very fond and will eat with avidity, and will feed to their young before going to roost. The lumps of salt for the loft must not be overlooked, as salt is indispensable to the bird's well being.

It is necessary to provide pure water, and never to allow it to become stale, or the fountains to be in an uncleanly condition. This is particularly applicable to the summer season, when water is more likely to absorb impurities which are detrimental to the health of the birds.

According to M. Megniere, impure water is the cause of the greater part of the maladies of pigeons. He recommends water impregnated with iron, and to clean the tanks or fountains every day.

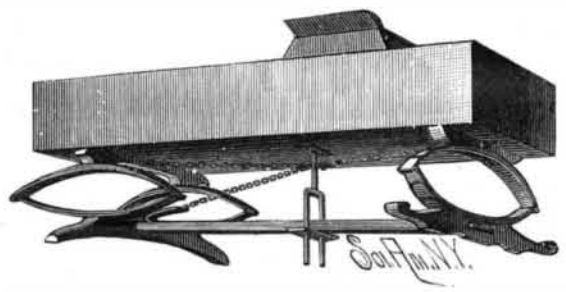
Carbonic Acid Gas Liquefied and Solidified.

At a recent meeting of the German "Verein zur Beforderung des Gewerbfleisses," some interesting details were given by one of the speakers as to the uses and the manufacture of liquefied carbon dioxide, which is becoming quite an extensive business. The idea of raising sunken vessels by means of carbon dioxide was spoken of, but it was stated that this notion had not been so far successfully carried out. It is well known that Krupp, at Essen, employs liquid carbon dioxide as a means of exercising great pressure on steel castings during solidification. Another use is that of removing the outer rings from condemned ordnance. Experiments were made at Essen by warming the entire gun, and then cooling the inner tube intensely and rapidly by means of liquid carbon dioxide.

Complete success was obtained, the inner tube contracting so much that the outer rings could be easily removed. It was mainly owing to the improvements in the method of manufacturing the liquid dioxide, which were worked out at Essen, that its systematic supply on a commercial scale has been developed, first by the firm of Kuhnheim & Co., of Berlin, and later by a company which has taken up their business. It is being largely used in the preparation of soda water, etc., and for pressing beer from the casks in the cellars to the taps where it is sold. At present the company are delivering eighty bottles per day of liquid dioxide, each bottle containing 8 kilogrammes, and costing 16 s. This daily manufacture is equivalent to 320,000 liters of gas. The bottles are of wrought iron, and are tested to 250 atmospheres pressure. Solid carbon dioxide is made by allowing liquid dioxide in a container to become gaseous and rush out through an outlet over which a porous bag is secured. A large portion of the gas escapes as such through the sides of the bag, but so much heat is absorbed that another portion solidifies, and is caught in the bag like snow. This can be made, by pressure, into a substance like chalk.

RUNNING GEAR FOR VEHICLES.

The object of this construction is to so stay the body supporting springs as to prevent their assuming a permanent forward or backward pitching or set, and to cause them to remain upright for more easy and effective action, irrespective of the load on the vehicle. The top of a metal rod guide, or frame is fastened to the wagon bed, and the forked rods slide in a plate fixed to the reach of the running gear. Attached to the stem of the guide is a chain, secured at its opposite end to the forward bed block by a screw bolt and nut. At the other side of the stem are fastened the ends of two chains, one of which is attached to the rear bed block and the other to the free end of a spring secured to the reach. These chains hold the springs at all times in proper relation with each other and with the wagon bed; and as the guide is free to rise and fall with the wagon bed and upper sections of the springs, the chains always have the same effect, no matter how light or heavy the load may be. Should the wheels run over an obstruction, so as to throw a sudden lengthwise strain upon the running gear, the spring to which the rear end of the lower chain is fixed would yield as the upper sections of the wagon springs are thrown forward with the bed; and when the wagon passes the obstruction, the spring will react, and draw the bed,



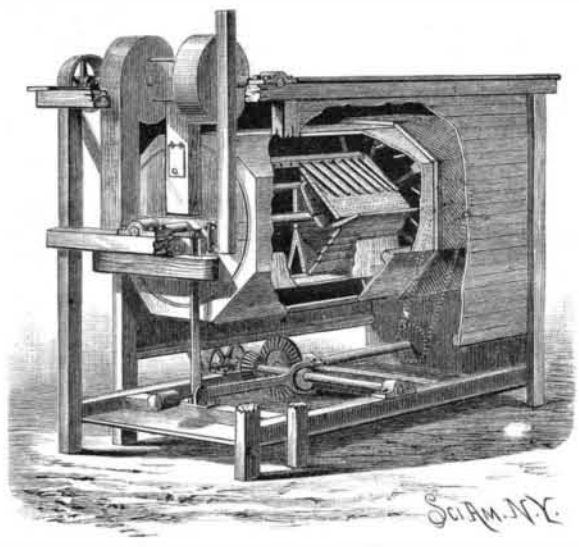
RUNNING GEAR FOR VEHICLES.

springs, and their stay chains back to normal position. This chain and spring also form an elastic connection between the upper and lower parts of the running gear.

This invention has been patented by Messrs. R. Wiehle, W. Lorey, Jr., and Christian Feuchter; further particulars can be had by addressing the latter at Ironton, O.

AN IMPROVED MIDDLINGS PURIFIER.

Since the general introduction of roller mills for the production of fine grades of flour, within the past 25 or 30 years, all parts of milling machinery have been in a rapid state of advancement in the line of making closer separation of the products of each different operation, and doing the work more perfectly and economically than was cared for, or even possible, under the old system. In this direction lies the special significance of the patents herewith illustrated, which are for certain improvements on a patent granted to the same inventor in 1882. The illustration shows so well the operation of the machine that but little need be said to explain its details. The middlings are fed through the chute coming down by the blowers, so that they drop upon the elevator drum; and as the drum revolves the middlings are raised and drop upon the peaked top, sliding down upon the riffles of the same upon the wing of a vibrating section, which is reciprocated to make very short and rapid strokes. The middlings then slide over ribs forming partitions arranged like steps, so that they drop vertically at each slot a very short distance. Air is forced into the box by one blower, and the other operates as an exhaust, but the working may be nicely regulated, so that the lighter particles will be carried through a particular chute to a suitable receptacle, while the coarser ones are passed into the screen shown at the right, where they are screened and carried off in their appropriate chute. The partitions through which the lighter particles are passed out may be regulated as desired, as also can be the air blast and suction, and the inclination of the ribs or riffles, according to the speed at which it is deemed best to pass



KLOSTERMANN'S MIDDLINGS PURIFIER.

the middlings through, giving the mill operator complete control over the machine, and enabling him to work each particular lot as may seem best at the time.

This invention is the subject of two patents recently issued to Mr. William Klostermann, of Young America, Minn.

MR. ERICSSON, the distinguished inventor, has received the Grand Cross of the Order of Naval Merit, recently conferred on him by the King of Spain. It comes to him through the Secretary of State.

The Ericsson Gun.

The *Naval and Military Gazette* gives an account of the arrival at the Royal Woolwich Arsenal of Captain Ericsson's new steel gun, intended for firing projectiles and torpedoes under water. It now lies at the inspection branch of the Royal Gun Factories, from whence, after some preliminary tests, it will be sent on board ship, probably at Portsmouth, for trial at sea. No less than forty tons of steel are used in the construction of the gun, which is 30 feet long and has a bore of 16⅛ inches.

It is a breechloader, and closes at the breech by an arrangement of a very simple and effective character. The vent, which is axial, is sealed, and said to be effectual in preventing the escapeof powder gases. The projectile measures 25 ft., which is only 5 ft. less than the gun, and is gauged to pass freely along the bore, which is unrifled.

It is hollow, and, notwithstanding its great length, weighs only one ton. The proposal is to fit the gun in the bow of a ship, 9 feet under the water line, so as to fire straight ahead from the cutwater. A diaphragm of India rubber is fixed over the muzzle to exclude the water, but is blown away at the first puff of the discharge. A charge of 20 pounds of powder is all that is thought necessary for propulsion, and this being placed behind the projectile, the breech is closed, and the gun is ready for firing.

It is asserted that a range of 300 yards under water may be relied on, butit is considered doubtful whether the shot can overcome the resistance of the water and retain an effective striking power for half the distance. The inventor, however, has tried his device, and he says he ought to know.

To preserve the lateral position and uniform depth of his submarine missile, he has weighted it to the gravity of water, and, while he keeps one side under by the preponderance of weight, he has a steering plate on the upper side which opens only after leaving the mouthof the gun, and acts as a rudder in keeping the projectile in its course.

The Fossil Wood of the West.

An interesting paper has been communicated to one of the California scientific societies on the fossil wood which is found in different localities throughout the State.

This silicified wood is stated to be a variety of quartz; the wood fiber is gradually replaced by quartz, leaving the form of the wood intact, so much so that sections cut and placed under a microscope show the characteristic grain of the wood, by which the genera may often be determined, and sometimes the species. In what is known as the petrified forest in Colorado, where are stumps of trees several feet in height and some twelve or fifteen feet in diameter, one stump seemed to have been fossilized while in a charred state, and from it fossil charcoal was obtained. Many of the specimens of wood are encrusted with layers of crystallized chalcedony of an opalescent tint, so beautiful that sections have been mounted and worn as jewelry. In Wyoming there have been found sections of trees 20 inches in diameter and several feet in length, like hollow tubes, with the interior surface entirely studded with pure quartz crystals, presenting a most beautiful appearance.

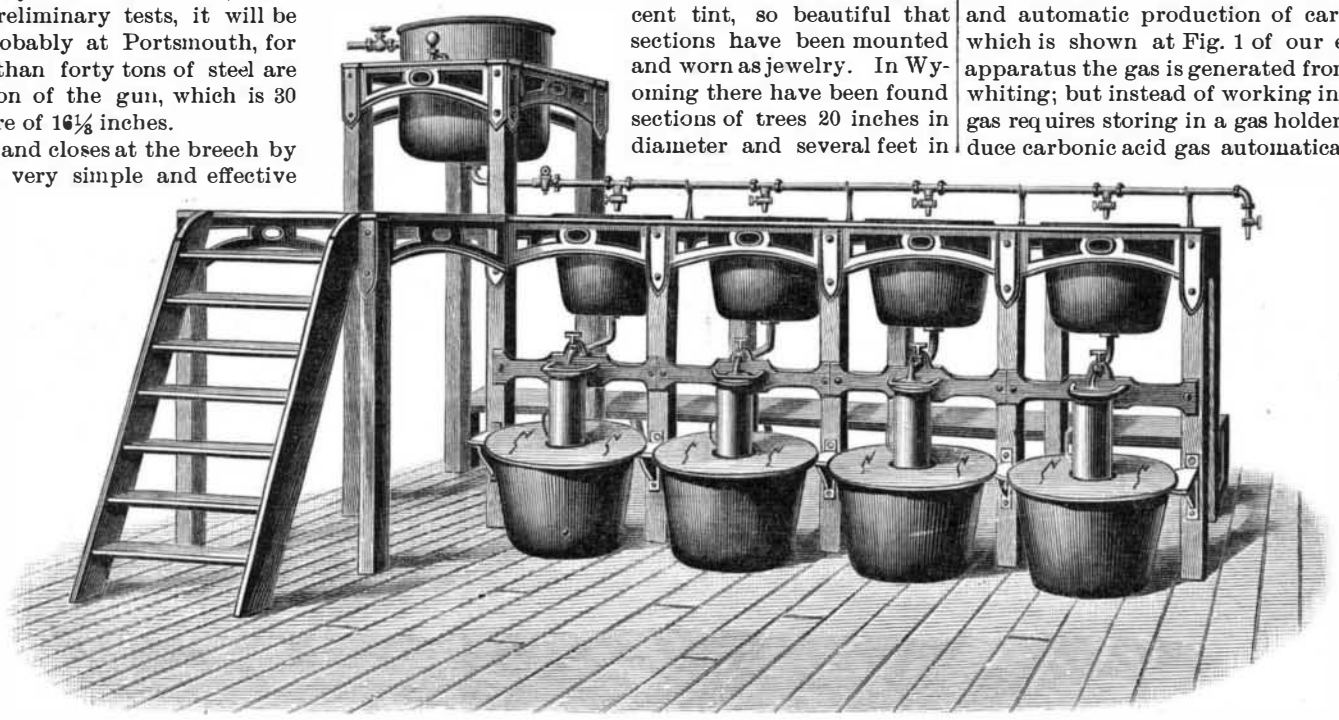


Fig. 2.—AERATED WATER MACHINERY AND AUXILIARY APPARATUS.

Earth in the Stable.

Nothing will purify and keep a stable so free from odors as the free use of dry earth, and every one keeping horses or cattle will find it pays to keep a heap of it at hand, to be used daily. A few shovelfuls of earth scattered over the floor after cleaning will render the air of the apartments pure and wholesome. The value of the season's manure pile may be largely increased by the free use of such absorbents. The strength of the gases and liquids absorbed is retained, and is the very essence of good manure.

AERATED WATER MACHINERY AND AUXILIARY APPARATUS.

The late brewing exhibition in London has introduced us to some more of Mr. Favarger's specialties, which we illustrate. These consist, first, of a double generator on Mondollot's system for the continuous and automatic production of carbonic acid gas, and which is shown at Fig. 1 of our engravings. In this apparatus the gas is generated from carbonic acid and whiting; but instead of working in such a way that the gas requires storing in a gas holder, the generators produce carbonic acid gas automatically, without the aid of a gasholder, and in exactly the quantity required by pumps of any description, that may be working from them. The machine consists of two separate and distinct generators, each one made to work independently of the other, but yet both connected by the same pipe to the pumps. This arrangement enables the generators to be worked alternately, so as to give time to renew the materials in each as they become exhausted. This plan has the advantage of preventing a stoppage of the works, even though one of the generators should meet with some unforeseen accident, for the other would always be ready.

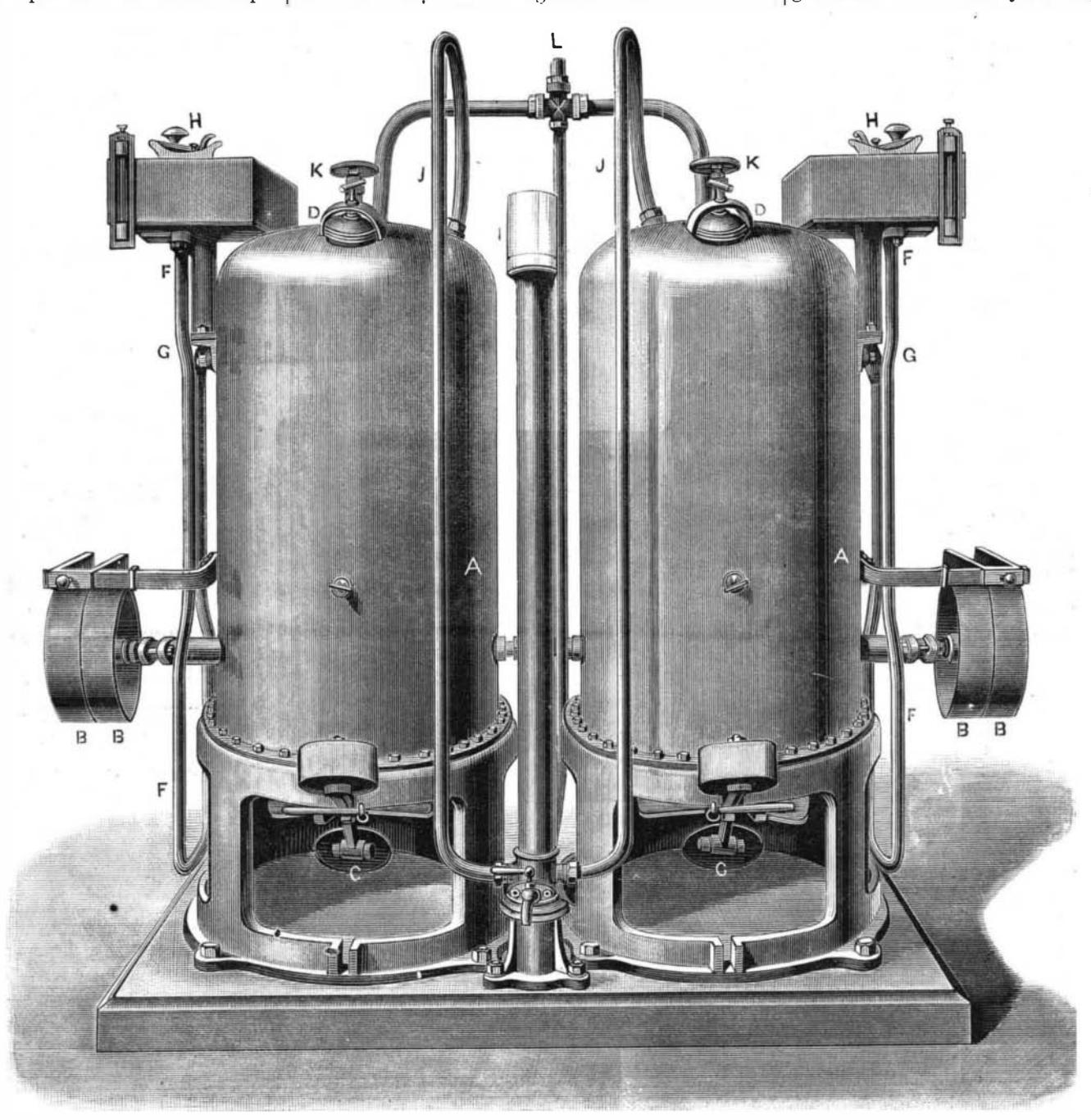


Fig. 1.—AERATED WATER MACHINERY AND AUXILIARY APPARATUS.

In Fig. 1, A A are the generators, which are made of copper and lined with lead. B B are fast and loose pulleys that drive screw-shaped fans inside the generator. C C are sluice valves for emptying the materials. D D are manholes for putting in the whiting. E E are leaden boxes containing sulphuric acid, which flows down the loops, F F, and by spouts, at G G, into the generator. H H are plug taps to stop the flow of acid. J J are two S-shaped tubes connecting each generator with the safety column, with the open glass top, I. K K are taps which command the pipes, L L, leading to the purifiers, and thence to the pump.

In operating with this machine a given weight of whiting and a given quantity of water are introduced through the opening, D. The box, E, is filled with sulphuric acid, which flows down the loop, H H, and into the generator by the spout at G. While the cap is still off the manhole, D, the fans are put in motion, and the acid tap, H, is opened. The acid then flows in freely, and, coming in contact with the whiting, creates carbonic acid gas, which drives the air out through the opening, D. When the air is quite blown out, the tap, H, is shut, and the cap put on the opening, D. As soon as this opening is securely screwed up, the tap, H, is opened, but no generation of gas will take place, for a curious action here occurs. As the first drop of acid