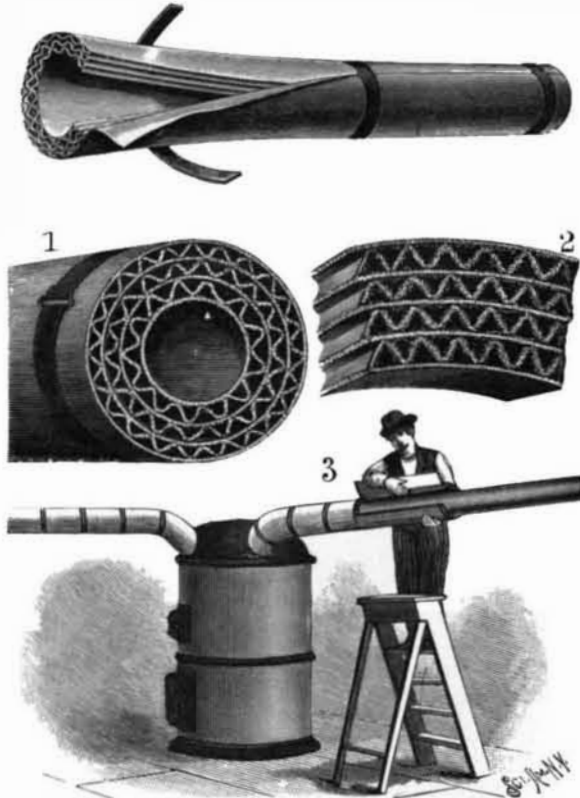


er is 9 feet $3\frac{3}{8}$ inches above the rails, the top of the boiler is 13 feet and the smokestack $15\frac{1}{2}$ feet above the rails. The driving axle journals are 9 by 12 inches, and the main crank-pin is 7 by 7 inches. The steam ports are $1\frac{1}{8}$ inch wide by 20 inches long, while the exhaust ports are $3\frac{1}{4}$ inches by 20 inches. The tender has a capacity of 5,000 gallons of water and 10 tons of coal.

A NEW COVERING FOR BOILERS AND PIPES.

Where pipes are used for the conduction of steam heat, water, or heated air, considerable loss results



GAST'S ASBESTOS AIR-CELL COVERING.

from the radiation of the heat. This causes not only decreased efficiency of service, but increases the cost of the fuel.

To overcome and prevent this loss of heat, and thereby reduce the amount of fuel required, a covering known as "Gast's" Air-Cell Covering, manufactured by the New York Fireproof Covering Company, No. 23 Dey Street, New York, has been devised.

This covering, as is shown in Fig. 1, combines in its construction the well-known non conducting qualities of the "air-cell" structure and the fireproof characteristics of asbestos. The covering is composed of divided air-cells, each independent of the other, produced by arranging in alternate layers sheets of plain and corrugated asbestos paper, wound into cylinders of proper interior diameter to fit all standard sizes of pipes. These cylinders are split longitudinally, so that they can be readily slipped on the pipes. They are provided with an exterior canvas covering and with metal fastening bands.

The covering is neat, light, and easily applied, as well as non-conducting; it is fireproof (a feature that should receive consideration), will not harbor vermin, and will not decay or deteriorate with age. The covering is strongly and compactly made, and, owing to its peculiar construction, will not crack or powder from vibration of the pipes or hard usage. It may be removed and re-applied an indefinite number of times without loss or deterioration.

As indicated in Fig. 2, the covering is also made in blocks, slabs, and other special forms suitable for the non-conducting jackets for boilers, steam-drums, smoke-flues, breechings, hot air ducts, etc., and when so used is superior to ordinary cement, not only as a non-conductor, but as a preventive of rust.

The covering, on account of its fireproof and non-conducting qualities, is particularly serviceable for incasing the hot air pipes

of the furnace heaters in the cellars of dwellings, etc. These pipes frequently lose in transmission more than half of heat generated in the furnace. This lost heat, when the pipes are covered by air-cell covering, would to a large extent be saved. The amount of fuel required would thus be reduced, and increased delivery of heat through registers would be attained.

A special form of this covering is also made for ammonia and brine pipes used in the manufacture of artificial ice and in the refrigeration of cold storage buildings. When applied to these pipes, the covering effectually prevents the formation of frost on the outside, thus increasing the efficiency. The covering may be employed in preventing cold water pipes from freezing and "sweating."

A New Hungarian Patent Publication.

As the Hungarian Patent Office does not publish any official gazette containing a record of the patents issued in that country, a journal has recently been established with a view to supplying this want. This journal is printed in four languages—Hungarian, German, French, and English. Some of the English descriptions are unique. We give below a specimen of the translations:

PROCEEDING AT THE PRODUCTION OF STOCKINGS OF THE LIGHT WITHOUT FLAME OF SPONTANEOUS IGNITION.

Claim.

Proceeding at the production of stockings of the light without flame of spontaneous ignition without use of heaters or putting-in of lighters, characterized by a stocking of light without flame of a provenience whatever prepared in such a manner after it's treatment in an alkalie bath by impregnation of one portion of it's surface by platina—or iridium—salts, that these salts form ethiops of platina or iridium or the oxydes of incandescence—oxyde of thorium or cerium, etc.—causing the ignition of the stocking at the contact with the mixture of gas and air.

THE NATIONAL ACETYLENE GAS GENERATOR.

Not many years ago acetylene gas was merely a product of the chemical laboratory. Although the great light-value of acetylene was well known, the great cost of the gas prohibited its general introduction as an illuminant. Acetylene may now be said to have emerged from the experimental stage and entered into competition with other illuminants. Three years ago but little was known of automatic acetylene gas generators; now many manufacturers are actively engaged in selling their apparatus and perfecting the forms they have already devised. Among the manufacturers who early entered into the making of acetylene gas generators may be mentioned the National Acetylene Gas Company, of Cleveland, Ohio. The apparatus made by the company is distinguished by its automatic action, by the means provided whereby the gas may be readily controlled, and by the simplicity of construction and of operation.

The National acetylene generator, as shown in our cut and diagrams, embodies essentially a water supply, *Q*; a generator containing a carbid receptacle, *A*; and a gasometer or gasholder, *G*. The gas generated in the chamber, *A*, is conducted downwardly by means of a pipe, and, passing through the triple valve, *E*, controlled by the handle, *Y*, is discharged into the gasholder, *G*. Water is supplied from the tank, *Q*, to the carbid receptacle, *A*, by means of a pipe controlled by the valve, *R*, operated by the lever, *S*, through the medium of the rod, *T*, attached to the gasholder, *G*. In its course from the

tank, *Q*, the water enters a tipping bucket, *U*, is discharged into the chamber, *V*, and, after having been conducted to the receptacle, *A*, is sprayed over the calcium carbid. The gas generated by the action of the water on the carbid, after filling the gasholder, is distributed by means of the pipe, *I*. As the pressure of the gas increases, the gasometer rises, and having reached a predetermined height, causes the rod, *T*, automatically to close the valve, *R*, in order to shut off the water from the carbid. When the gasometer descends, the valve is reopened and gas is again generated. Should the pressure become abnormally excessive, the surplus gas is discharged to the open air through the vent pipe, *J*.

A SAFETY-ATTACHMENT FOR SCAFFOLDS.

Swinging scaffolds which are used in painting the outer faces of buildings are generally suspended from ropes passing through blocks. The ropes may break or become detached, and thus cause the scaffold to fall. To prevent such accidents, the safety attachment shown in the annexed illustration has been devised.

To some portion of the building above the highest point reached by the scaffold a device is secured to which a rope is attached. This device consists of a turnbuckle provided with rods extending far enough from each side to engage the inner faces of a window opening. A rope is secured to the turnbuckle by means of a hook, and is carried down around the scaffold and extended up beyond the other side, thus forming a loop in which the scaffold is inclosed. After having been passed around the scaffold, the rope is secured to a second turnbuckle by means of a hook adapted to slide on the rope and temporarily secured at any point by tying a knot in the rope. The second or lower turnbuckle can be moved up or down on the



CODY'S SAFETY-ATTACHMENT FOR SCAFFOLDS.

wall of the building, and is always held a short distance above the scaffold.

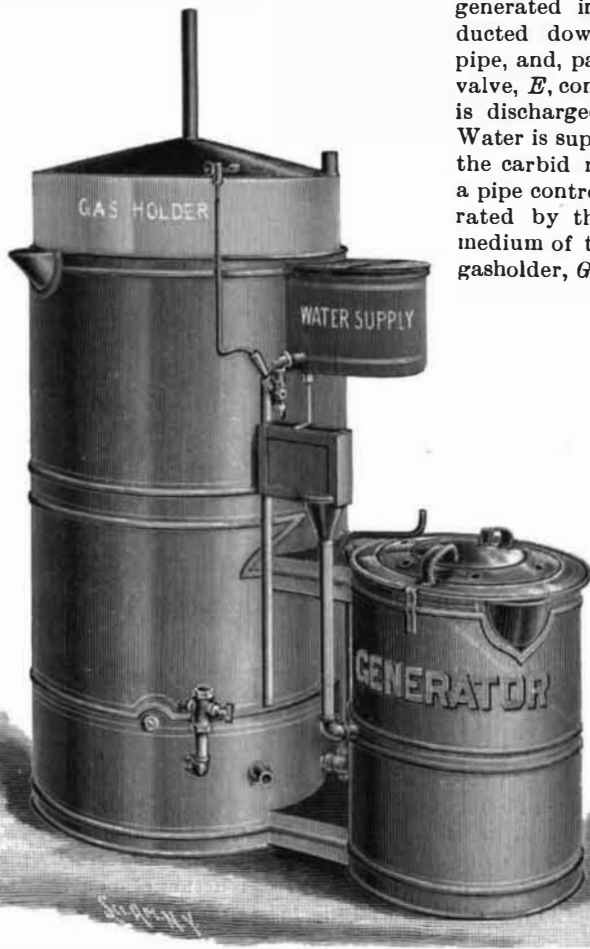
The first or upper turnbuckle is firmly secured to the upper part of the building and is left there until the work is completed. That portion of the rope which is secured to the upper turnbuckle is passed behind the lower turnbuckle, and thus serves to hold the scaffold against the building. The lower portion of the rope should be of such length as to reach the ground.

The safety rope encircles the scaffold with a slight slack, so that it may receive the weight of the scaffold, should the suspending ropes part or become detached from their support.

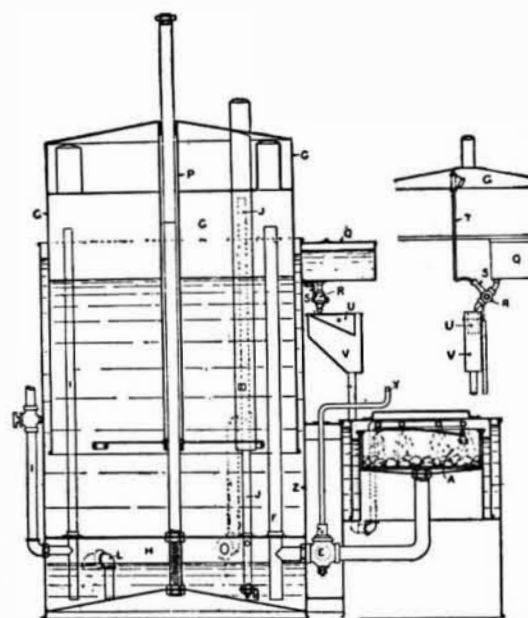
The attachment is the invention of Martin Cody, 106 East 109th Street, New York city.

At the Colonial and Indian Exhibition, a few years ago, specimens of a whitish resin, bearing some resemblance to Manila elemi in appearance, were shown

from the West Indies, and labeled "Gommier or Incense." These products are now referred to several trees of the natural order Burseraceæ. The Gommier or mountain Gommier, or Gommier rouge of Dominica and the Gommier à Canots of St. Lucia, appear to be *Dacryodes hexandra*, Griseb. Another species yielding a similar resin is *Bursera gummifera*, the birch tree of Jamaica, the Gommier of the Windward and Leeward Islands, and the turpentine tree of St. Vincent. The resin of *Protium guineense* affords the Gommier à l'encens of St. Lucia, the Tacamahaque huilense incolore, the encens of Cayenne, and the Tacamahacca of Venezuela.—Kew Bulletin.



THE NATIONAL ACETYLENE GAS GENERATOR.



SECTION OF GENERATOR AND DETAIL OF THE WATER-SUPPLY.