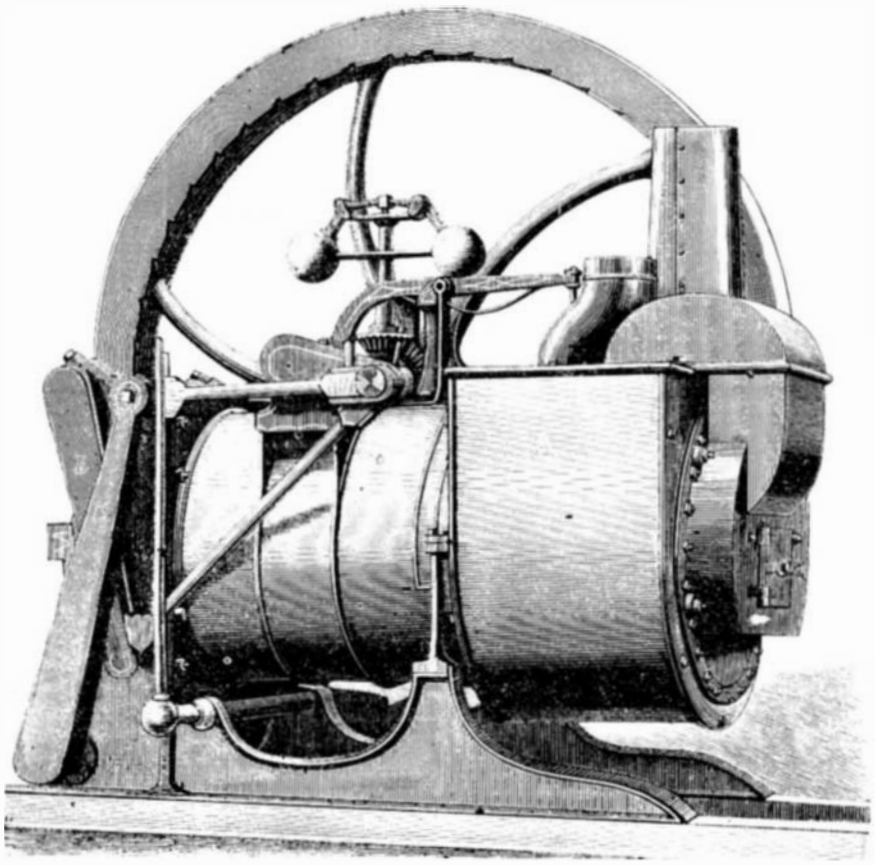
Improved Caloric Engine.

From many parts of the country, correspondents are frequently writing to us requesting information on caloric engines and their adaptation to small manufactures. The engraving published herewith, represents the Ericsson caloric engine which has now been in practical use for many years, doing all kinds of work where only a moderate degree of power is required. The advantages arising from the use of such machines are that they are economical of fuel, use no water and can be worked by any one of common intelligence. They also warm the rooms in winter, thus saving the use of extra fuel for that purpose. They are entirely free from liability to explode and may be used on any floor of any building without increasing the rates of insurance. Many improvements suggested by a practical experience of ten years have been introduced, making them much more durable and efficient than when first offered to the public. For further particulars apply to the manufacturer whose advertisement is always to be found in our advertising colums. For a full account of what the engine is we quote from the report of an eminent consulting engineer who thoroughly investigated the subject for a firm in England who proposed to manufacture them He says:



ERICSSON'S CALORIC ENGINE.

"The plan of the caloric engine is good, as regards its fitness for obtaining power directly from the dry heat of incandescent fuel, being properly fortified against its effects. Its mechanical arrangement for transmitting this power is also excellent, the parts being well proportioned, and having the necessary provision for adjustment, and compensation for wear. The furnace, or heater, is a cast-iron chamber, and is within the cylinder, and being constantly exposed to the action of dry heat, it may be regarded as undergoing a gradual deterioration; it is accordingly so constructed that when unfit for use it can be expeditiously replaced with a new one. This operation, however, is by no means so frequent as might be supposed of a heater lasting from two to six years.

"The engine has a good machine-like appearance, and is principally composed of cast iron, the use of which material enables the manufacturer to get them up at a small cost.

"In determining the question of economy in the production of power by this machine, reference must be had to the steam engine, because in both, power is produced by the consumption of fuel, thus presenting for both a common measure of cost.

"But in addition to the matter of fuel, there are other considerations which should not be lost sight of in this comparison: Steam engines are exceedingly variable as to their economic results, being affected in this respect by a number of independent circumstances, such as the arrangement of the boilers and of the furnace, draft of chimney, proportion and set of the operating valves, etc. A great deal is also dependent upon the skill and faithfulness of the attendant. And it is in view of these circumstances that some steam engines cost twice as much as others to produce the same amount of power. It is also worthy of notice, as a well-established fact, that small steam engines consume more fuel accordingly than larger ones, while at the same time they require more care and manipulation to run them properly, especially in managing the boiler and water-feed. The caloric engine is entirely free from all such difficulties, requiring no attention whatever after starting, except the occasional supply of fuel, and a little oil to the bearings and joints, while the speed is as regular as the vibrations of a pendulum.

"I have examined a number of these caloric engines in operation, which were doing the work heretofore accomplished by small steam engines.

"They all gave complete satisfaction and apparently ample power for the purposes to which they were applied; but without experiment it is impossible to say what quantity of power they actually furnish respectively, but, judging by the appearance of things they all worked well and with surprising regularity evidently developing a much larger amount of power from a given quantity of coal than could be obtained from steam engines as at present constructed, of corresponding powers. And being such that they may be placed in any location from which a chimney may be reached, and not requiring water or skilled attendance, they are particularly desirable as a driving power for small manufacturers, who are thereby enabled to conduct their operations in the business parts of the cities, by occupying upper lofts.

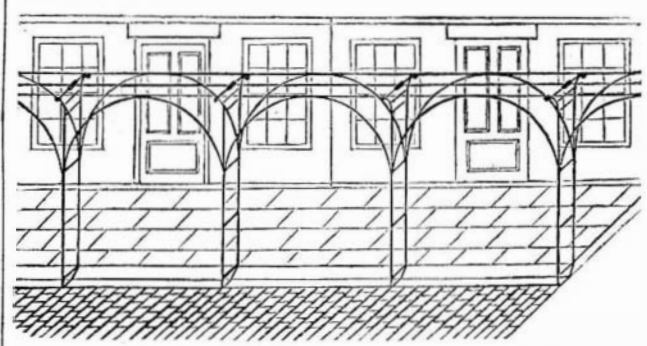
"No attention is required for them while running, beyond what is necessary to throw in a few coals occasionally, which is all that is required to keep up a constant and uniform motion—which considerations become of importance to those who require a small power only.

"As to the appreciation of this machine by the public, it may well be said that whereas it was a few years ago looked upon as a mere mechanical curiosity, it is now regarded and acknowledged as a reliable motive power."

Address Jas. A. Robinson, 164 Duane street and 136 Reade street, New York, for further information.

ELEVATED RAILWAY FOR STREETS.

We present herewith an engraving of a suspended railroad, which we copy from Gillespie's "Manual of Road Making," published by A. S. Barnes & Co., No. 51 John street. The arrangement was suggested by the late Charles Ellett, Jr., in 1844, for an atmospheric railroad. Prof. Gillespie makes the following remarks:—

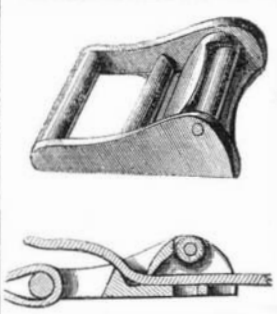


"A railroad worked by a stationary engine, would be the most convenient method of relieving the rush of travel through Broadway. The railroad track should be supported on iron columns, out of the way of carriages, as in the figure. These columns might be placed on the edges of the sidewalks, where now are the lamp and awning posts, and by extending over the gutter they would have a base of three feet. Their lower extremities should be set in heavy masses of masonry. At top they should spread outward, a foot on each side, which would give sufficient width for the railroad track. The columns should be set at distances of 15 or 20 feet, and connected by flat arches. There would be no flooring over the street, and the rails would intercept no more light than do the boards which now connect the awning posts. No locomotives, or even horses, would pass over the road; but an endless rope would continually run over pulleys, and light cars would be under the most perfect control, and could be attached to it, or disengaged, at will, and stopped more easily than an ordinary omnibus. At the upper end of Broadway, a stationary engine, or the water power of the Croton, would easily and cheaply keep up the circulation, which would pass up one side of the street and down the other. At each corner might be a platform, to which there would be a short flight of steps from the sidewalk, the ascent of which would be very easy; or a certain number of corner houses might be used as depots, so that passengers might step into the cars from their second story windows. As these cars would replace the omnibuses, the entire street would be left for miscellaneous travel."

FRYE'S BUCKLE

This buckle is one of that class which has no tongue, or rather no tongue which penetrates the strap, but in lieu of it a pawl or lever which holds the strap by jamming it between two contrasted openings.

Heretofore such buckles have been restricted to the use of straps of a certain thickness, otherwise they became inefficient. The inventor of this buckle claims that he has discovered a remedy for this trouble, and that straps of any thickness within reason can be used in it.



This is effected by making the pawl, A, of a different form from that commonly used. Instead of having the V-form it is made nearly flat, and is fitted with a short spur, B. This sticks into the strap and aids to draw the pawl to its seat, and also prevents any back movement from unbuckling it. No strain comes on the spur after the pawl is down to its seat. The entire patent is for sale.

A patent was procured on this invention through the Scientific American Patent Agency on Jan 23, 1866, by R. E. Frye; for further information address him at Manchester, N. H.

THE Chincha Islands do not exceed in extent two and a half square miles, yet for years past they have supplied guano to an average of four hundred ships per annum, the value of such cargoes in Europe being upward of £50,000.

Improved Bow Iron.

The ordinary method of constructing carriage bows requires considerable skill, and takes a good deal of time to fit them all properly. Usually the bows are made of wrought or malleable iron, and the subject of this invention is to simplify as well as reduce the cost of construction.

The irons, shown covered with leather in the engraving, are received in a casting, A, which is for convenience formed of two pieces, or sides, fastened together, but it may be made of one single piece as well. The bows are made of stout hoop iron, and the ends inserted between the sides, A, and there secured by rivets. As one of the bows must be stationary, ribs are cast on one of the sides, A, which forms a sort of pocket in which the end of the bow is received; thus holding it in the proper position.

It is claimed that this plan of making the bow iron is much cheaper and better than the common one.

It was patented Jan. 16, 1866, by H. M. Bidwell, of New Haven, Ct., whom address for further information.

BIDWELL'S BOW IRON.

Photography on Silk

The following formula for printing on silk is one that, on the whole, has given me the greatest satisfaction, and is identical with the one published by me two years ago:—

Pour 20 ounces of boiling water on 100 grains of chloride of ammonium, and 60 grains of Iceland moss.

When nearly cold filter and immerse the silk in it for 15 minutes. To sensitize, immerse the silk in a 20-grain solution of nitrate of silver for 16 minutes. Let the nitrate bath be rather acid. When dry, prepare for printing by attaching the silk to a piece of cardboard a little smaller than itself, by turning the edges over and fastening with small bits of gummed paper. Slightly overprint. Wash in two or three changes of water, and tone in a gold bath made thus:—20 ounces of water, 2 drachms acetate of soda, 4 grains chloride of gold, and a few grains of common whiting. Filter and keep for 24 hours before using. Let the prints be toned slightly bluer than they are required to be when finished. Rinse them in water, and fix in a solution of hypo., 4 ounces to the pint of water. 20 minutes is ample time for fixing. Wash well.—*H. Cooper, Photographic News.*

White Enameled Plates for Photography.

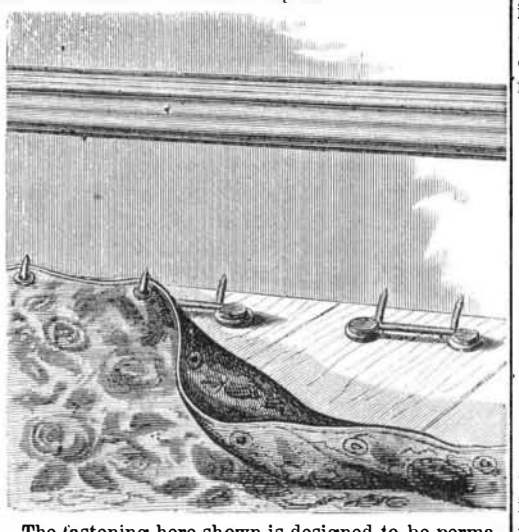
In a paper read before the Philadelphia Photographic Society by Mr. Wenderoth, he gives the following as the method by which he prepares white tablets for photographs. He coats the plate—a ferrotype or a glass plate—with a solution of albumen one ounce, water five ounces. He then adds to plain collodion so much fine precipitated chalk as will make a covering so thick as to prevent the plate from being seen through it. It should be poured on in the same manner as ordinary collodion, and care taken to prevent lines from being formed. Before coating, the collodion should be well shaken up, and then allowed to subside for a minute or two, to allow the heavy particles to fall to the bottom. When quite dry, coat with twelve parts of albumen and eight parts of water, adding two grains of chloride of ammonium to each ounce of the solution. Sensitize for one minute in a seventy-grain ammonia-nitrate of silver bath, then fume, print, and tone in the usual manner.

Stomatoscope.

"Among other novelties noticed in the *Med. Times and Gaz.*, is "a new instrument, to be termed the *stomatoscope*, exhibited last week to the Paris Surgical Society by its inventer, Professor Burns, of Breslau. A platinum spiral were (inclosed in a box-wood cup, to prevent the transmission of heat), brought to a red heat by the passage of an electric current from two of Middeldorps' elements, is placed in the mouth behind the teeth. The light reflected by a very small mirror is sufficiently intense to render the jaw transparent, so as to allow of the vessel proceeding to the roots of the teeth, the smallest specks of caries, etc. becoming visible. By reason of the transparency, even the labial coronary artery may in some subjects be seen at the level of the commissure, and its course followed. The instrument is therefore likely to form a useful means of exploration in dental affections.

ANDREWS & BURNHAM'S CARPET FASTENING.

Tacking down carpets is an antiquated and bad practice which ought to be abolished. Both the carpets and the floors are injured, thereby, and in some dwellings that have been occupied for years the boards are iron-clad. Tacks are always difficult to remove, and are, in many ways, not necessary to dwell upon, a weariness and vexation of spirit.



The fastening here shown is designed to be permanent. When once affixed to the floor it remains there and the carpet is slipped over it. It would be a great improvement in this fixture to have eyelets in the carpet which would prevent the wires from holding on one or two threads. A tack holds not so much by its body as its drawing into the wood. Carpets so put down can be taken up easily, swept, and put down again without going through the great labor of drawing tacks. We have no doubt but that housekeepers will appreciate this invention.

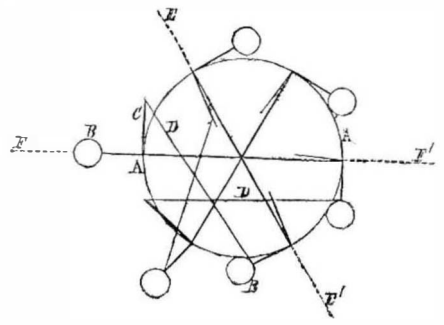
Patented August 29, 1865; address for further information J. P. Burnham, 1,159 Prairie avenue, Chicago, Ill.

Correspondence

Perpetual Motion.

Messrs. Editors:—The idea of perpetual motion is so fascinating to some that I am induced to throw a little light on one that has occupied a considerable attention—the one called Leache's, and exhibited along the Canada line. A friend of mine, Mr. B., saw it, and believed and invested in it. He examined every part and pronounced it a genuine "perpetual motion." He then without L.'s knowledge came to my shop and built a larger one with a 30-inch wheel.

I inclose a diagram and description of this wonder:—



A A represents the balance wheel; B the motive balls; C the angle irons connecting balls to the wheel and to each other; D D are the cords connecting the angle irons. D is represented only on part of the balls. It was supposed that the balls would fall out when at the point, E, but they would not until near the point, F. Now, when the balls, B, fall off from the rim of the wheel, they would, by aid of the cords, D, draw in the opposite ball, but it would not "come to time;" only two balls would remain out while four were in, and the wheel would not stir.

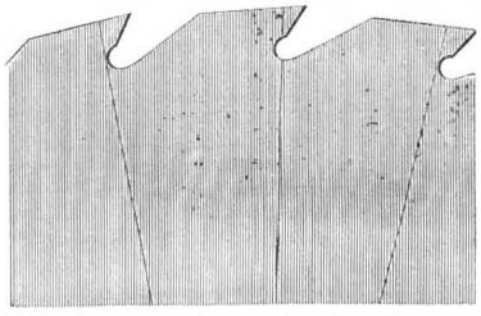
So much for this one; others compare favorably with it. S.

Brattleboro', Vt., April 27, 1866.

[This is one of the oldest forms of the delusion.—Eds.

Sawing Lumber.

Messrs. Editors:—In the Scientific American of March 31, page 212, I see an article from F. M. E., asking for information in regard to running circular saws. I have to say, that, first of all, the saw should run true on the mandrel, which is not always the case. The saw should range into the carriage half an inch in twenty feet. The mandrel should have nearly one-eighth of an inch end play. The guides should be one-sixteenth of an inch from the saw, or a little nearer, perhaps, in hard wood. The teeth should be



one inch and a quarter long, or deep, from the point. The under side of the tooth should range about eight inches from the center for hard wood, and ten inches for soft wood; or, if a large saw, twelve inches will not be too much.

I use a patent gummer, and cut out no more between the teeth than is necessary, leaving the tooth as strong as possible, as in the diagram. The top of the tooth should range one-fourth of an inch below the point of the next tooth back of it. I stand on the front side of the saw to file, and file all the teeth alike, nearly square across, but not quite, making the corners of the teeth on the side of the saw toward the carriage a trifle the shortest; this contracts the range of the saw into the carriage. When the teeth wear off on the side, pointed like a pegging awl, they must be swedged out or filed off and set again.