

MEDALS FOR INVENTORS IN FRANCE.

We find in *L'Invention* a list of the awards of silver and bronze medals recently made by the French *Societe d'Encouragement Pour l'Industrie Nationale*. The principal awards of silver medals were as follows:—

MAKING GEISSLER TUBES.

The first medal was decreed to M. Alvergniat, Jr., for the introduction into France of the manufacture of those glass tubes which exhibit such curious electrical phenomena and are known as Geissler tubes. France as well as other nations had previously obtained these tubes wholly by importation from Germany.

DIAPHRAGMS OF BOILERS.

The second medal was for a beet root press. The third was bestowed upon M. Boutigny d'Evreux for his diaphragms for steam boilers, which the committee say are of great service in removing scale.

ELECTRIC LAMP.

It is sometimes necessary to enter an atmosphere of poisonous gas, to rescue persons who have fallen in it, or for some other purpose. This can be done by having in the mouth the ends of breathing tubes communicating with the free air. But if a light is required, an ordinary lamp would not answer the purpose, as it would be extinguished in the poisonous gas. Messrs. Dumas and Benoit have devised an electric lamp to be used in this case. It consists of a single galvanic battery, a Ruhmkorff coil, and a Geissler tube, all arranged in compact form. The Association say it has been tried successfully in the mines of Alais and Saint-Etienne, and they are therefore happy to decree the inventors a silver medal.

MANUFACTURE OF GLASS AND EMERY PAPER.

The committee remark that the use of polishing paper dates from 1792. A manufactory of the article was established by Mr. Fremy in 1814, and his son M. Dumas Fremy, has now a manufactory at Ivry, which is a model establishment; both in the excellence of its products and in the care for health and well being of the workmen. A silver medal is, therefore, awarded to M. Fremy.

ELECTRO-MAGNETIC ENGRAVING FOR CALICO ROLLERS.

A silver medal was awarded to M. E. Gaiße for an improved process of engraving copper rollers for printing calico by magneto-electricity. The process is not explained but an explanation is promised at some future time.

BEEF TENDONS FOR STEPS.

M. Gautron, a manufacturer of centrifugal machines, having experienced great difficulty in finding any material which would endure the severe friction at the bottoms of the shafts, finally succeeded perfectly with the tendons of beeves. His machines run at a velocity of from 1500 to 2500 revolutions per minute, but the tendons last a long time and require very little oil.

The report also says that these machines have been used with success in the manufacture of potato starch, producing an article of perfect whiteness and purity.

THE DYEING OF THE NINETEENTH CENTURY.

A medal was awarded to M. Grison for his work with this title.

BALANCES OF PRECISION.

M. Hempel employs thirty workmen in manufacturing delicate balances for scientific investigations, and he received from the society a silver medal for the excellence of his workmanship.

BLOWING UP BUTCHERED ANIMALS.

A bronze medal was bestowed upon M. Beliard for an apparatus, consisting of vessels of compressed air and india-rubber tubes, for blowing up the skins of slaughtered animals to facilitate their removal. It is said to be more convenient for the butcher boys than the bellows at present in use.

IMPROVED MODE OF RAISING OYSTERS.

M. Kemmerer, of Saint Martin, Isle of Re, places the young oysters in cells formed in tile quite similar to the cells in which bees raise their young. This is said to cause a rapid and remarkably perfect development of the mollusk.

PETROLEUM.—The value of a tract of land on Oil Creek, Venango county, Pennsylvania, two miles in width and twenty miles long, is estimated at two hundred and fifty millions of dollars. Four years ago his land was hardly worth five dollars an acre.

CEMENTATION OF IRON BY CARBON FROM GAS RETORTS.

The last number of *Le Gaz* publishes a note from M. Caron, presented to the French Academy of Sciences by M. Sainte-Clair Deville, giving the result of an experiment with gas retort carbon for converting iron into steel. The experiment was suggested by a statement of M. Regnault, that in furnaces at Sevres the porcelain is blackened when it was placed in the neighborhood of a morsel of graphite from gas retorts, and that in the same circumstances iron is transformed into cast iron. M. Regnault inferred from this that gas retort carbon might be more active in the cementation of iron than charcoal.

M. Caron placed a bar of wrought iron, four-tenths of an inch square and a foot long, in an earthen tube filled with pieces of gas retort carbon, and buried it in a fire of similar carbon, where it was kept at a cherry red for six hours. On being removed it showed no traces of cementation.

On analyzing the carbon, M. Caron found it to be far more impure than had been supposed. It contained nearly one per cent of sulphur, and traces of potassa and soda. M. Caron says:—

"Thus, in the cementation which I have attempted to produce, I have put in contact with the iron a coal very sulphurous and containing no sensible quantity of free alkali. But I had previously demonstrated that in these circumstances acieration could not take place, because the production of alkaline cyanides was impossible. The result which I have obtained is therefore a confirmation of the theory of cementation that I announced six years ago."

He then repeated the experiment, but with the addition of 10 per cent of carbonate of potassa, and the cementation was easily effected. The same result was also produced by adding 10 per cent of natural carbonate of baryta.

ASPARAGUS A SUBSTITUTE FOR COFFEE.

Some two years since a patent was obtained by Mr. James P. Gage, of Staten Island, for the use of asparagus as a substitute for coffee. He asserts that the seed and root of asparagus are found to contain caffeine, the peculiar principle of coffee, in larger quantities than the coffee berry.

Caffein can be extracted from coffee and obtained in white crystals by a chemical process which is not very complicated. The coffee is first soaked in ether which dissolves and extracts the caffeine. The solution is then mixed with water, and the subacetate of lead is added, when the caffeine is thrown down in a solid precipitate. After the removal of the excess of lead, and filtering, the caffeine is obtained in white needles, slightly flexible and transparent, with a silky luster, feebly bitter, and free from odor. Coffee contains from $\frac{3}{4}$ to $6\frac{1}{2}$ per cent of caffeine; the weakest being the St. Domingo, and the strongest that from Martinique.

If the root and seed of asparagus do really contain caffeine in larger quantities than the coffee berry, it is a very interesting fact. We should like to see the matter tested by some of our chemists.

GOESSLING'S CORN-SUGAR PATENTS.

As we continue to receive applications for copies of Goessling's patents for making corn sirup, the claims for which were inadvertently forwarded on the 10th of May last, when the patents were not issued, we publish the following letter relating to the subject from the Commissioner of Patents:—

U. S. PATENT OFFICE, Feb. 16, 1864.

GENTLEMEN—No patents have been granted to F. W. Goessling, of May 10, 1861. Respectfully,

D. P. HOLLOWAY, Com.

MESSRS. MUNN & CO.

A patent was issued on the 20th of December, 1861, to Mr. Goessling, and the following is a copy of the specification:—

No. 45,561.—IMPROVEMENTS IN THE MANUFACTURE OF SUGAR.—F. W. Goessling (he having assigned his right, title and interest in said improvements to himself, H. F. Briggs and L. Bradley), Buffalo, N. Y.:

To all whom it may concern—

Be it known that I, Frederick W. Goessling, of the city of Buffalo, County of Erie, and State of New York (assignor to Henry F. Briggs, Lyman Bradley and myself), have invented or produced a new compound sugar, and I do hereby declare that the follow-

ing is a full and complete description of the manufacture or compounding thereof.

The nature of this invention relates to the manufacture of a new article of sugar from a combination of cane sugar with corn sirup. I take a sirup made from Indian corn by any known process of making corn sirup or corn sugar; the process being carried to that point where the sirup is purified and rendered in a condition to granulate or crystallize.

I also take a quantity of cane sugar (any kind or quality of cane sugar will answer the purpose, and dilute it or reduce it to a liquid sirup and purify the sirup by any known process of purifying cane sugars and render it in a suitable condition for crystallization. These two sirups are then mixed or combined together for crystallization and conversion into a new compound sugar, the crystallizing process being completed, and the new sugar perfected after the combination of the two sirups. The crystallizing process may commence in each sirup before the two are combined, and be completed after their combination.

After the mixture of the two sirups, as above stated, the mixture will be in a thick semi-liquid state, and it is then transferred to the mold for the completion of the crystallizing process, and the further treatment by "liquoring" in a common manner.

The proportion of cane sugar or cane sirup used in combination with the corn sirup, is not definite or material, as a larger or smaller quantity will effect the purpose.

The object and effect of this combination is to induce the whole mass to crystallize in the same manner that cane sugar does, and to give the whole the taste and the qualities of cane sugar.

I also propose, in some cases, to use the sirups produced from wheat and other cereals, as a substitute for Indian corn sirup in combination with cane sugar, and for the same purpose as above stated.

What I claim as my invention, and desire to secure by Letters Patent, is a new and improved compound sugar made by a combination of cane sugar or cane sirup with corn sirup, substantially as set forth.

Good Books.

The new and enterprising publishing house of Messrs. Hurd & Houghton, No. 401 Broadway, have added to their large and valuable stock by the purchase of the entire list of publications of J. G. Gregory, consisting of J. Fennimore Cooper's Works; "Forest Pictures in the Adirondacs," by John A. Bowes; "A Selection of War Lyrics," with illustrations by Darley; "A Forest Hymn," by Wm. C. Bryant, illustrated by John A. Hows; "In the Woods," illustrations by John A. Hows; "Christmas Poems and Pictures," illustrated; "The Vagabonds," illustrations by Darley; "The Snow Image," by Nathaniel Hawthorne, illustrations in colors; "Spectoria," surprising spectral illusions; "Golden Leaves from the British Poets"; "Golden Leaves from the American Poets." This firm keep a general assortment of the best books to be found in the market.

A Valuable Patent.

The Hartford Arms Company, just organized for business, has a Government contract for 200,000 Hammond rifles, and has agreed to pay the inventor, a Bridgeport mechanic, \$10,000 in gold or its equivalent in cash, \$2 on each rifle manufactured, for the patent, and a salary of \$2,500 as superintendent of their manufacture. The statement in some of the Connecticut papers that this arm has been selected out of thirty different models as the one for the United States service, is erroneous, as the military commission appointed to make a selection, and who have been in session in Hartford, have as yet reached no conclusion.

ANTIQUITY OF ZINC.—A strange discovery, if true, has just been made at Pompeii. The *Italia* of Naples states that a fountain has been discovered there, covered with zinc. It is added that this is the first time that the said metal has been found at Pompeii. We should think so; for though the ore was known to the Romans, the metal was not extracted from it, so far as our knowledge goes, until the sixteenth century, by Paracelsus.

Statistics show that cows in good condition require about thirty pounds of hay per day.

Flour Bolt, Duster and Cooler.

The nature of this improvement consists in the application of a blast of air of the ordinary temperature of the atmosphere, or below it, to the exterior surface of the bolting cloth, for the purpose of keeping the meshes of the cloth dry and clean, and at the same time cooling and drying the flour. The engraving illustrates the device, which consists of a conical-shaped tube, A (Fig. 2), made of zinc, tin, sheet-iron or any light substance, having one or two lines of perforations, B, or slots, running its length, or the length of the bolt reel, C. The tube is applied by passing it through the length of the bolt chest, above the center of the bolt reel, with the line or lines of perforations or slots directed towards the cloth and the center of the reel, and in close proximity to the bolt cloth. Air introduced under pressure at the large end of the tube by a fan, bellows, or air pump, throws a strong, sharp and even blast of air through the perforations, B, in the tube, against the exterior surface of the cloth, covering its interior surface at each revolution of the bolt reel.

The advantages gained by this improvement are many, and will be readily suggested to the mind of every practical miller in the land. Some of its advantages are thus spoken of by Messrs. H. L. Bennett & Co., of Novelty Mills, Avon, Ill., who have one in use:—

“It keeps the meshes of the bolt cloth dry, clean and clear, thereby enabling a much finer bolt cloth to be used, and raising the grade of the flour. It greatly increases the bolting and grinding capacity. It also cools the meal directly after it is discharged into the bolt, thereby dispensing with other cooling apparatuses. The meal may be carried directly from the stones or grinding surfaces into the bolt, and the flour comes from it as cool as the air that is thrown into the bolt chest. In damp and warm weather, or in grinding damp grain, it produces a yield of from one to three pounds more of flour to the bushel. By keeping the bolt cloth dry, clean and cool, it adds to its durability. As the air that is thrown into the bolt chest can be of any desired temperature, the operation of grinding and bolting can be perfectly uniform at all seasons of the year and in all kinds of weather. Through the application of this cool dry air the moisture is driven out of the flour, and it is in a condition to be packed directly from the bolts, without danger of souring. A large amount of flour is annually lost by being packed too damp or in a heated condition. Flour by remaining for a length of time in a damp or heated state, if it does not actually sour, loses much of its value.”

This invention was patented Dec. 6, 1864. For further information address Chas. L. Stevens, Galesburg, Ill.

Pumping Machinery.

We take the following paragraphs from the report of Chief Engineer Birkinbine, of the Philadelphia Water Works:—

“The dam at Fairmount was constructed by Mr. Ariel Cooley; the first crib was sunk on the 19th of April, 1819, and water flowed over the dam January 5th, 1821. Mr. Cooley died a short time prior to its completion, from the effects of exposure while building it.

“The over-fall of the dam is 1204 feet long; the mound-dam 270 feet, and the head arches 104 feet; making its whole length, including the Western pier, 1600 feet. It backs the water up the river for six miles.”

Respecting the Fairmount dam he says:—“Wheels Nos. 4, 5, 6, 7 and 8 were made as heavy as possible, under the mistaken idea that the increased momentum of the rim would give efficiency to the wheel. On account of this weight they cannot be kept in repair.

It is necessary to be continually renewing the starts, buckets and soleing. The pumps connected with these wheels are, with the exception of that attached to No. 4, broken in some important parts.”

And of some water wheels:—“The hot water heating apparatus placed in the new mill house answers the purpose; maintaining it sufficiently warm to prevent frost, and making it comfortable to work in without the annoyance of dust and gas, as was the

and take moderate exercise, during recovery, whereby the general health is much benefited. No crutches are used and the wounded leg is undisturbed.

The body is supported entirely by metallic braces, as at A, in Fig. 1, and these braces are connected to a padded clamp, B, Fig. 2, which is strapped to the thigh. The main support, A, has a joint at the knee so that the limb can be bent for walking or sitting down, and the lower end of the main support is bent

under the foot, at right angles, so as to carry the foot and support the legs. Thus it will be seen that the body rests entirely upon this foot-piece and not upon the leg at all.

To prevent the leg from the possibility of coming in contact with the ground by slipping the pad, the body is further supported by another pad passing under the posterior portion of the frame, as at C, (Fig. 3), and there is an angle piece, D, at the bottom of the foot, which can be adjusted at any desired elevation so as to support the front part of it; a vulcanized rubber cushion, E, at the bottom of

the whole, makes this supporter noiseless when used on uncarpeted floors or pavements, and prevents the iron from injuring furniture in the house when laid against it. The full length figure, which is published with the supporter applied, and worn in a sitting posture, shows the position of the several parts when so used.

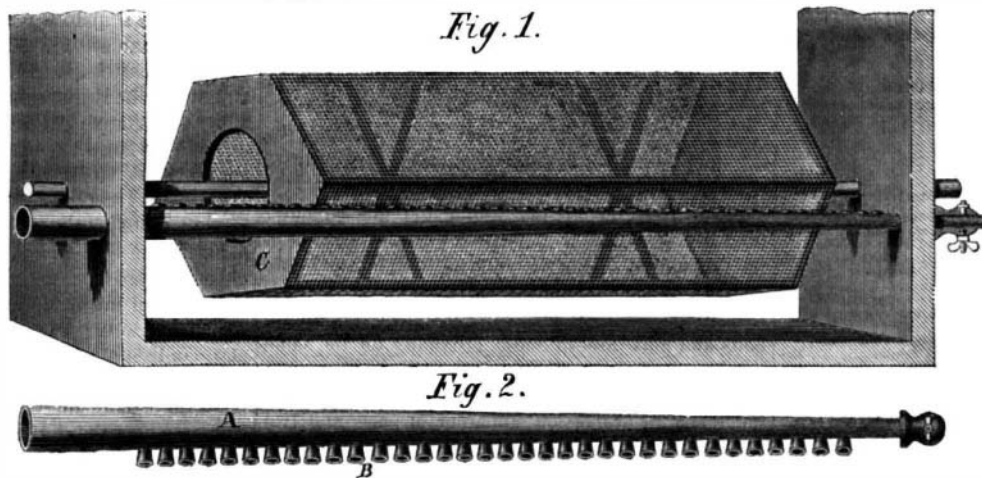
The exact length of the supporting bar is not of great consequence, as individuals can be fitted with the apparatus especially; limited adjustment is possible, however, by the nuts on the thigh clamp, B.

When the patient is to be seated for any length of time, the clamp, B, can be taken off by unscrewing the nuts, and the instrument can be worn inside or outside of the pantaloons as desired. This appliance will doubtless be found useful for wounded soldiers, persons with sprained limbs and others. It is noiseless, has no squeaking joints, and seems in all respects desirable. A patent was procured on it through the Scientific American Patent Agency, on the 4th of October, 1864, by D. H. B. Allen, of Chelsea, Vt. Town, county and State rights for sale. For further information address the inventor as above.

Tellurium.

The curious metal, or metalloid, which Klaproth named tellurium, has hitherto been one of the rarest of known substances, found only in a very few localities—chiefly in Hungary and Transylvania—and there only in such minute quantities that its selling price in England has never, we believe, fallen below 10s. per ounce. In a paper, however, on the mineralogy of South America which is contributed to the January number of the *Philosophical Magazine* by Mr. David Forbes, F.R.S., we are told of an ore of bismuth which contains not less than five per cent of tellurium. This ore occurs in Bolivia, about two-thirds up the mountain of Ilcampu, which is the highest of all the peaks of the Andes, towering to nearly 25,000 feet above the level of the Pacific Ocean. It is thus far from being convenient of access; still, the demand for bismuth has sufficed to set men mining it—at an altitude of 15,000 feet, and only slightly under the line of perpetual snow—so that we may expect tellurium, as well as bismuth to be soon very much cheaper than hitherto.

PETROLEUM INVENTIONS.—More than thirty patents were issued in the last six months of 1864 for inventions relating to petroleum, such as drills for boring wells, devices for removing paraffine and other obstructions from the veins of the rock, pumping and raising oil, lining oil barrels, etc. Many more applications still remain in the Patent Office unexamined, and, judging from the number of new cases we are constantly sending forward, the present year will be still more prolific of successful inventions in this profitable field.

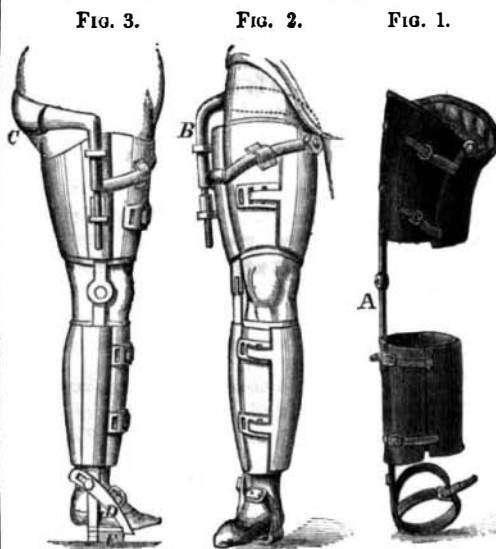


BOON & STEVENS'S FLOUR BOLT, DUSTER AND COOLER.

case with the old stoves. The heat is diffused throughout the whole building better than with stoves, and with a large saving of fuel.”

ALLEN'S SUPPORTER FOR FRACTURED LEGS.

The confinement consequent upon fracturing a leg is very tedious, and wears greatly upon the nervous



system of some patients. Some time must necessarily transpire before the bones are firmly knitted so as to sustain the weight of the body, and unless crutches are used, convalescence is sometimes as hard to be borne as the pain from the injury. The object of this invention is to allow the patient to walk about