er, I, Figs. 10 and 11, also electrically insulated from the frame, holds a spring arm, *h*, Fig. 10, which rests on a circuit breaker, *i*. The operation of this arrangement is such that, when the arm, *h*, rests on the non-conducting portion of the circuit breaker, no current can traverse the links of the magnet, but, when the conducting part, *m*, comes in contact with the arm, *h*, a circuit is made, and the armature made to rotate during the contact. Having thus described the mechanical details of the application of the sector magnet to the production of rotary motion, we will proceed to describe the mode of utilizing the reflex currents. Referring to Fig. 10, and considering the armature to be revolving in the direction of the arrow, and supposing that the circuit breaker is so adjusted, with reference to the arm, *h*, as to continue the action of the current till the axis of the magnet and armature are coincident, and then break, we should find that the reflex action of the current would resist any attempt of the armature to continue its onward motion, and this resistance is equivalent to seventy-five per cent of the battery current. But, if the adjustment of the circuit breaker be such that the current is broken previous to the coincidence of axis of the magnet and armature, then the reflex current, instead of retarding the motion of the armature, will expend itself in assisting its motion; therefore, in order to convert this reactionary property of the currents into a valuable element of force, the circuit breaker is adjusted under such conditions as will insure a break previous to the coincidence of the axis of the magnet and armature, as shown in Fig. 10, the dotted lines showing the position that the armature obtains through the action of the reflex currents, the break having been made when the armature was in the position shown by the full lines.

CLAIM.—First. The combination of the sector magnet, A, and sector limbed armature, F, with their adjustments or without. Second. The breaking of the circuit previous to the coincidence of the axis of magnet and armature, substantially in the manner specified.

Breweries and their Fittings.

A paper "On the Machinery and Utensils of a Brewery," was read before the Society of Engineers, in the hall of the Westminster Palace Hotel, London, by Mr. Thomas Wilkins, C.E.

The size of a brewery is stated in the number of quarters of malt that can be used in one brewing; thus, a brewery having a mash tun in which twenty combs of malt can be mashed at a brewing, would be a "ten quarter brewery," and so on, the rest of the plant being made in proportion.

Until steam came into general use as a motive power, all the labor was done by hand or horse power; sometimes a water wheel was used; but it is believed that on no occasion has wind power been applied. Of late years, steam has not only been used in breweries as a motive power, but also as a means of transmitting heat; so that the brewer having a boiler to supply steam to the engines, uses it also to supply steam for boiling both liquor and wort, either by forming the boiling coppers with an outer pan or jacket of iron, and passing steam through the space between that and the inner pan of the copper, or by passing the steam through coils of copper pipe fixed at the bottoms of vessels made of wood, iron, or copper, whichever of these be preferred.

In building a brewery every advantage should be taken of any favorable natural features of the locality, such as a hill side, where the building may be arranged so that the utensils can be placed in a position one above another in level, taking advantage of the natural slope to save labor, which might otherwise have to be expended in pumping the worts or beer about. A good supply of suitable water, or "liquor," as it is called in breweries, is also indispensable. That there is this should always be ascertained before either building a new brewery or extending an old one.

The mash tun should be made either of good yellow deals or of oak, and should have a false bottom, generally of iron, made of several plates, so as easily to be removed for cleansing the tun. These plates are very closely perforated with holes about one twelfth of an inch in diameter; sometimes, however, with slots that width, but about two inches to three inches long, cast in them. These slots and also the small holes are about three eighths of an inch on the bottom side of the plate, being made so much taper to prevent their blocking. The plates with slots are more expensive than the others, but some brewers prefer them. The mash tun should contain from eighteen to nineteen cubic feet for every quarter of malt. Formerly, when the crushed malt had been placed in the tun, the nearly boiling hot liquor was run in, and the whole was thoroughly mixed together by men with poles, each having several cross pieces, about the size of the staves of a ladder, in one end. This operation is termed mashing, and these oars are still used by some brewers, more especially where a "Steele's" or a similar machine is used.

A better and more certain method of mashing was required; for it was found that in some parts of the mash tun a sort of cake or dumpling would be formed, the outside of which, consisting of a pasty mass of flour, prevented the liquor reaching the inside, to extract the valuable ingredient of the malt. The machine which for many years has been fitted to mash tuns, to perform this operation, is made as follows: A circular crank, with radial teeth, is bolted to the sides of the mash tun; a vertical shaft is erected in bearings in the center of the tun. This shaft is either carried some few feet above the top of the tun, or else passes through a stuffing box in the bottom, and is worked by bevel wheels from a horizontal shaft. The vertical shaft supports loosely a bearing which carries one end of a second horizontal shaft, which is inside the tun, at about half its depth. The other end of this shaft has a pinion keyed upon it. This pinion gears with it, and is supported by the circular rack before mentioned. A revolving motion is given to this horizontal shaft by bevel wheels from the vertical one, and upon it is hung a sort of rake, which, as the shaft revolves, thoroughly mixes up the mash. Sometimes there are two, and even three of these rake shafts. It will be obvious that, as these shafts revolve, the pinion gearing into the fixed rack causes the whole to revolve somewhat slowly round the tun.

In large breweries, where there are sometimes a dozen or more mash tuns, rather than have a large engine, it is better to have a small one to pump all the liquor, and another to grind the malt; and these may be kept at work all day, preparing for the morrow. Indeed, a vast amount of money in first cost, and in labor afterwards, may be saved by properly planning and arranging everything beforehand.

TOY STEAM ENGINE.

This is a very simple and pretty toy engine, consisting of very few parts. It is the invention of Philander Macy, of Rochester, N. Y. It is a beam engine with oscillating valve

gear, and the pedestal upon which it stands is the boiler. By filling the boiler and setting it upon a stove, the engine will work as long as the water supply lasts.

Cracked Sovereigns.

It has probably fallen to the lot of many readers to have come into possession occasionally of gold or silver coins which were hollow, or cracked on their edges, and therefore not sonorous when tested by the well known "ringing" process. Speculations as to the source of the imperfection are numerous, and various theories have been advanced and discussed in regard to it.

Perhaps one of the most extensively prevailing notions as to the origin of cracked sovereigns and cracked coins of other denominations, is, that all pieces of money fabricated at the British mint are, in the first place, made in halves, the heads and the tails being afterwards paired and united by cementing, soldering, hydraulic pressure, or some other means. This operation being in some cases imperfectly performed (as it is argued), a partial or complete divorce may afterwards take place, and hence the phenomena of cracked moneys.

Another supposition is, that the hollow coins have been tampered with by gamblers for their own nefarious purposes. Neither of these theories, however ingenious they may be, is the correct one. The evil really arises in the way we shall attempt to describe. All the legitimate metallic money of this country is made from bars of cast gold, silver, or bronze. At the Royal mint there are orthodox sizes for these bars, so as to produce each variety of coin in use outside its walls. Those for sovereigns are twenty-six inches long, one and a half inches wide, and one inch thick; and, for the purpose of facilitating explanation, let us confine our attention to gold only.

Such bars are cast in vertical molds of iron, which latter are fitted together in halves, so as to allow the giant nuggets to be realized easily from within them. On filling a mold from the crucible of molten metal held over its mouth, the resulting bar cools rapidly. Those parts of the bar which touch the sides of the mold cool first, and more gradually the center is reduced in temperature. As the sides of the bar harden at once, they cling, as it were, to the walls of the mold, whilst the metal in the middle contracts in cooling, and subsides down the mold. The upper end of a bar of gold resembles much at this juncture the mercurial column in a barometer when the "glass" is said to be "falling." It is hollow or depressed in the middle, and sometimes very much so, the depression occasionally extending to one inch.

The lower end of the bar is perfectly squared, because the base of the mold is square. When removed from its iron case, the bar is carried to the rolling mill for lamination. It is passed again and again between the rollers, until it is attenuated into a strap or ribbon; but that which was its upper end is still defective. The rollers have simply compressed the precious metal, and therefore left the hollow end a mere crevice or thin line in the middle of the strap. This end is considered as scrap, and, first cut off by a pair of shears, it is returned to the melting pot. It happens, sometimes, nevertheless, that a sufficient portion of imperfect ribbon is not cut away, the crack thus extending beyond the amputating point. When this occurs, it creates the evil of "cracked sovereigns." The ribbon is removed to the punching press, and perforated from end to end by a punch of the exact size of a sovereign. Some of the disks of metal thus produced *may* be cut from the bad end of the strip of gold. To detect these criminals, if they exist, a small staff of boys is employed. They are each armed with a bright-faced anvil block of cast iron, and they ring every individual disk in very rapid succession on the anvil. The sound and perfect pieces give forth harmonious music, whilst the others are dumb dogs, and have no music in their souls. The defaulters are, or should be, all picked out, and condemned to the "fiery furnace" once more. Boys are not infallible, and they have permitted "dummies" to escape now and then. These pass forward to be stamped at the presses, milled on their edges, and issued to the public, by whom they are criticised, and justly condemned. The hollowness of their characters is only detected, it may be, after some contact and friction with their neighbors, just as speciousness in the human character is only found out by the application of the tests of adversity and trouble. With the care at present exercised at the mint, hollow coins cannot escape detection.

Correspondence.

The Editors are not responsible for the opinions expressed by their Correspondents.

Utilizing Coal Dust for Fuel.

MESSRS. EDITORS:—Bringing into practical use the coal dust or slack coal, is today the great question; and as you have given space in your columns to a great many communications on the subject, will you do me the favor to insert this letter on the manufacture of artificial fuel or compressed coal dust?

It is a well known fact that coal, either bituminous or anthracite, produces in mining, breaking, screening and handling, an amount of dust, commonly known as slack coal, amounting, on an average, to 50 per cent of the coal production, thus causing a considerable loss to the parties engaged in mining, as but a small portion of this dust coal, and that only of the bituminous coal, is needed for blacksmith purposes, while the anthracite slack is entirely useless. The immense quantity of refuse coal must necessarily be got out of the way, whether dumped into a stream, to be carried off, or heaped on ground which has to be dearly paid for.

In the anthracite coal regions, this immense amount of waste is constantly being piled up around the mines in vast, unsightly mounds, burying the mining villages, and sadly encroaching on the limits of many of the chief towns. The amount of this waste cannot be less than fifteen millions of tuns, and every year adds to the rapidly increasing dirt bank.

In France, in Germany, in Belgium, and in England, the slack of the bituminous coal has been converted into lumps or cakes of different sizes and shapes by mixing it with coal tar. Monsieur Dehaynin, from Paris, started the first manufacture of artificial fuel or agglomerated slack, at Montigny-sur-Sambre (Belgium) about eleven years ago. He possesses today two manufacturies in Belgium and two in France. He manufactured in 1870 over 1,200,000 of tuns; railroad companies used 931,600 tuns, the navy used 250,000 tuns, and other industries used 70,000 tuns.

Among the railroad companies, that of the Paris, Lyons, and Mediterranean consumes pressed coal exclusively, requiring 1,200 tuns per day. The Northern Railroad Company, of France, between Paris, Amiens, Dunkerque, and Calais, does not use pressed coal exclusively, although its daily consumption amounts to 300 tuns. The scarcity of coal tar is the only thing which prevents M. Dehaynin from erecting other factories and increasing the manufacture of his compressed coal.

It will be observed that the railroad companies and the navy are using almost exclusively compressed coal, while private manufacturers do not seem to like it. The reason is that the burning of that coal produces such a smoke and such a bad smell that it is entirely unfit for domestic use, and cannot even be used in stationary engines, people in the neighborhood complaining of the nuisance. It was only permitted to be used in some sugar refineries and distilleries, situated at a reasonable distance from cities; and even then the law compelled the proprietors of those manufactures to raise their stacks to a specified hight.

So important has this subject of converting coal dust into lump coal been regarded, that the United States Commissioners, to the Paris exposition of 1867, have made a report on pressed or agglomerated coal, which presents the subject and its importance in an able and instructive manner.

That report sets down among the advantages attending the use of pressed coal, the following:

"Its purity and compactness adapts it to the rapid production of steam in furnaces and small fire grates, and it is, therefore, a desirable fuel for steamers and locomotives, for which it is largely used in Europe.

"Being manufactured in prismatic form, it can be very compactly stored on shipboard or elsewhere.

"It can readily be transported to great distances with very little waste, amounting, it is stated, to less than one tenth the waste of ordinary coal, handled under similar circumcumstances.

"It is not injured by frost, by snow, or by rain. Bricks of pressed coal produce as much steam in locomotives as an equal weight of coke. It is much liked by firemen, especially for raising steam in ascending heavy grades.

"Soft bituminous coal, or the mixture in which it predominates, is generally used in the manufacture of pressed coal."

I will especially call your attention to this last paragraph of the Commissioner's report.

In France and Belgium, the soft bituminous coal contains from 60 to 70 per cent carbon, and costs twice as much as the hard coal, which contains only from 30 to 40 per cent carbon, the balance being slate, schist, and other substances. The compressed or agglomerated coal, made from the bituminous slack, is sold as high, and sometimes higher than the bituminous lump coal itself. In this country, on the contrary, the bituminous coal contains from 45 to 60 per cent carbon, and is sold at a cheap price, whereas the anthracite contains from 80 to 95 per cent carbon, and is sold twice as high as the bituminous coal. The bituminous slack has some value for blacksmiths, and is burnt in furnaces, while the anthracite slack has no value at all.

The difference in the value of the coals accounts for the fact that all the experiments, or, at least, most of them, made in this country, have been made on anthracite slack.

A great many attempts have been made to convert slack coal into a solid combustible. For this purpose, gum, coal tar, petroleum, asphaltum, rosin, solutions of glue, alkalies, silicates, magnesium, Grahamite, and the remains of fabricated oil have been used, and the processes patented. These various experiments of solidifying anthracite slack have been failures. The high price of the ingredients used increased the expense so that it could not be applied to bituminous slack, in order to compete with the lump coal. Applied to anthracite slack, there was another difficulty. It has always been easy enough to solidify the slack, but to keep it solid in the fire till the coal is entirely consumed is something which has not been achieved yet.

Some inventors are still trying to solidify anthracite slack by means of coal tar, pine pitch, or rosin, giving the lump a heavy pressure, by using powerful machinery. In their opinion, the more compact the lump, the better it will stand the fire. In my opinion, no matter the pressure given to the lump, fire will penetrate it and consume the resinous substance, before half the heating power of the coal has been obtained. The pitch or rosin being consumed, the lump will slack in the fire, and pass through the grates.

I have been for five years, from 1857 to 1862, commercial agent of one of the most important coal mines in Belgium, and have sold to Mr. Dehaynin tho first two shiploads of slack coal for his factory at Montigny-sur-Sambre. I have seen him trying for three years to compress slack of hard coal with pitch and other substances, so that it would stand the fire, without succeeding.

In Belgium principally, and also in Germany and in France, the working population in the coal regions, and the country people, are burning any kind of slack coal by mixing it with from 30 to 40 per cent of yellow clay. It will be easily understood that such a large proportion of clay must reduce considerably the burning qualities of the coal. Still, after a fire has been started with ordinary bituminous lump coal, they pile upon it, as high as they can, a pyramid of coal dust and clay, mixed together, and simply molded and pressed by hand. The coal is used exclusively for open grates. They obtain, at least, a good fire, sometimes lasting a whole day without replenishing. The coal made in that way has to be sheltered, as rain and snow dissolves it.

This being a fact well known by everybody who has traveled in these countries, I have been working and experimenting for three years on that principle, always trying to increase the proportion of coal, and consequently reducing the proportion of clay. I succeeded so far, by a peculiar way of mixing and of working the mixture, as to reduce the proportion of clay to 8 per cent for bituminous slack. I invented a composition in which the coal is dipped, so that it becomes waterproof, and does not need to be sheltered. I have been manufacturing and selling that coal made from Sewanee slack coal, for the last four months, in Nashville (Tenn). The cost of manufacturing, including the ingredients used, has not exceeded one dollar per tun.

As I had never tried my process on the anthracite slack, I came to Philadelphia expressly for that purpose. The slack of the anthracite not being so coarse as the bituminous slack, I have been able to make the lumps compact with only 5 per cent of clay. Samples of all shapes have been submitted to the Franklin Institute, who will report on it at the next meeting. These samples have been made from Lehigh coal slack, by myself, at the Delaware Chemical Works, or at those of Messrs. Baugh & Sons, of this city, who have had the kindness to give me all the facilities for my experiments.

I am going to manufacture some tuns of it, so as to be able to test publicly the burning qualities of this fuel, and will send you the results of the experiments.

Philadelphia, Pa. EMILE F. LOISEAU.

The Earth Closet System.

MESSRS. EDITORS:—On page 326, current volume of your valuable paper, I was pleased to see an article on the earth closet system, accompanied by an engraving of a new English invention in this line. Too much cannot be said or written on this important matter, and you will therefore, I trust, pardon me for relating some of my experience, for the benefit of your readers.

I have tried a good many experiments with dry earth, and have used the earth closets at my country place, and am convinced that nothing but ignorance stands in the way of the universal adoption of the system, both for the city and country. It is always with regret that I return to the wasteful and unhealthy water closet of the city, after having been spared all of its bad odors and dangerous gases during the summer months, by the employment of the simplest of all disinfectants, dry earth.

The open vaults of the country are the worst contrivances, for the dissemination of malaria and fevers, that could be invented. The saying that "there is health in the old house and death in the new," is founded upon the effects of those vaults in a thickly settled country, to poison the waters by percolation and the air by the escape of bad gases. When the homestead was built on the side of a hill, the drainage water ran away, and did little damage, but when the shoots from the parent stock planted their houses on the plain, they caught the foul waters and the fever at the same time, and hence the origin of the saying.

The simplicity of the dry earth disinfectant prevents many persons from trying it; they are as wrath as was Naaman when commanded by the messenger of Elisha to wash in Jordan seven times—they want some extravagant chemicals—nothing short of carbolic acid, permanganate of potash, protosulphate of iron, or chloride of lime, has the true scientific ring about it; as for dry earth, they do not believe in it. In the country, it is a few minutes work to sift enough earth to last a family, of five persons, a month, especially as the earth can be used over again five or six times.

The great point is to avoid sand, and to have perfectly dry earth. Hard coal cinders can be used, but not wood ashes.

After the small wagon under the seat is full, it can be emtied npon a protected floor for drying, and when the odor of the earth resembles that of guano, it is admirably adapted for use in the garden, and fresh earth may take its place.

It is surprising how thoroughly the dry earth absorbs all the bad gases and disinfects the deposits. And no one who has not tried the experiment can appreciate the value of the system. I advise every one who lives in the country to adopt the earth closet, and to abandon the unhealthy open vaults, which are such unsightly objects and the occasion of so much irregularity of habit, and the fruitful source of so many diseases.

CHARLES A. JOY, Columbia College, New York city.

Examination of Engineers and Boiler Tenders.

MESSRS. EDITORS:—I have read with much interest your complimentary article, on the second annual report of this department, in the number bearing date May 6, and the reference to it in the number of May 13, in which the idea is conveyed that more light on the subject of the examination of persons having charge of steam boilers, would be acceptable.

In answer to your words: "I am not aware what the standard of classification adopted in Philadelphia is; it is probably none too rigid," I would state that the standard for a first-class engineer is, that he should be able to calculate safety valve lever examples, and thoroughly understand the principles involved; also to calculate the pressure required to burst a boiler, when all the dimensions are given, together with the value of the material to be used to the inch of section. He is also required to calculate the difference between the strains on the curvilinear and longitudinal rivets; the difference in value between double and single rivets; and the comparative strength between the shell, flues, and other parts of a boiler. His knowledge of the importance of keeping the water at all times above the fire line; of keeping the safety valve in good order, together with daily examination, and the necessity of keeping the boiler clean inside and out, is also tested. He is also questioned as to the proper mode of blowing off a boiler. Should he answer all of these questions satisfactorily, and still entertain the idea that a boiler will not explode so long as the water is at its proper level, he would not be entitled to a first class certificate.

Then with reference to the engine, he must know how to set the steam valve, and be able to explain tho effect and advantage of lap, lead, and cushion. He must also be reasonably well posted on the various parts of a stationary engine.

I should be pleased to know your opinion of the Philadelphia standard for a first class certificate, and if you consider it too rigid.

You say the safe boilers are those known as "sectional." This is a fact beyond controversy, but I cannot resist the temptation to call your attention to another fact with reference to the boilers under the charge of this department. This is the third year of its existence, and it has inspected as large a number as 2,000 in a year, of which only one, and that a sectional Harrison boiler, has so far scratched a single individual. Some of these boilers are eighty inches in diameter, and of all sizes and forms.

Five men have been scalded by insured boilers during our existence. These are exempt from city inspection at the option or the owner or user. We have one boiler insurance company in operation and another in prospect.

T. J. LOVEGROVE,
Inspector of Steam Engines and Boilers.

Philadelphia, Pa.

[We do not think the system of examination described by our correspondent any too rigid. It is perhaps sufficiently so, however, when coupled with proper inspection of boilers. —EDS.

Invention Wanted.

The following letter from a Texas deer hunter has been forwarded to us by Messrs. E. & H. T. Anthony & Co., of this city, dealers in photographic materials, etc., who think such a lamp as is sought for, would meet with good sale:

Gentlemen: Those in this country who follow hunting feel the need of a perfect head lantern to hunt deer with at night. Seeing the kind of business you are in from your advertisement in the papers, I thought you might be able to invent a lamp or lantern for night hunting, that would be a success. We want such an one as will reflect the light in front of the one who wears it to the distance of 100 yards or more. A strong reflector is needed; it must be made light, so that it can be worn on the head without much inconvenience. It should reflect the light in front only. We have a lamp made here, of tin, to burn lard oil, but it is not a complete success, though we kill a great many deer with it, by first shining in their eyes and then shooting them.

Such a lamp as described above, and patented, would be a source of revenue to the getter up of it. It should be constructed to burn lard oil, as this oil does not produce much heat or deposit much soot. J. B. STEMSON, M. D.

Sherman, Texas.

Wyoming Coal.

MESSRS. EDITORS:—In a recent issue, I notice an account of Wyoming coals, which was really news to people here; and whoever wrote it must have obtained his knowledge from some very unreliable source.

In the first place, they are not using Carbon, or any other Wyoming coal, at the gas works in Omaha, for the very reason that it is not at all suitable for gas making, and it is not probable that it is used at Denver. Rock Spring and Evanston coals, which are by far the richest in gas, only give about 7,000 feet to the nett tun, and the quality of it for light is about equal to an alcohol flame, which it greatly resembles. Wyoming coal will not coke, but turns in the retorts to what is known as breeze. An approximate analysis is, carbon, 76·95; volatile matter, 15·00; ash, 8·00; sulphur, 0·05. Of the volatile portion, about one half is water.

Pittsburgh coal is used in the gas works here. The Wyoming is not a bituminous coal, but more properly a black lignite; nor is it the opinion of competent geologists that bituminous coal will ever be found in the Rocky Mountains. It is reported, however, that 120 miles south of Salt Lake City, there exists a bed of true bituminous coal. For smelting furnaces and blacksmithing, it is nearly as good as nothing. It is splendid for heating the chimney above the forge fire, but the helpers might as well go to sleep, for they would not be needed to strike for hours; and I doubt if a welding heat can be obtained easily in an ordinary forge fire, on an iron of any considerable size. They are not using it at the Union Pacific Railroad shops, for smithing or smelting. They have carefully tried it, and condemned it. For domestic, and also for steaming purposes, it is certainly very fine; but it is all nonsense to talk of its giving more heat than Lehigh. It makes but very little clinker, and can be burned so that there is little waste. It is hoped for and believed that some mode may be discovered by which it can be used in the manufacture of iron; but it is not so used now, to the knowledge of the leading mechanics of the city, with whom I have conversed, or from whom I have heard.

Let me say that Western people would rather have the truth known in regard to their country; and before that Philadelphia paper again comments, it would be well to ascertain the facts. T. L. VONDORN.

Omaha, Nebraska.

Diamond Drills.---Another Richmond in the Field.

MESSRS. EDITORS:—We inclose a slip from your issue of 6th inst., under heading "Pemoval of the Hell Gate Obstructions," the last paragraph of which contains a misstatement to which we beg leave to call your attention. The paragraph reads: "These diamond drills are being used very extensively in the marble and slate quarries of Vermont, and Severance & Holt are extensively engaged in making them. In addition to drilling single holes in the rock, they are used for channeling purposes, a number of drills being used intersecting the holes, so that a complete cutting is made."

It is a fact that such machines as are above described are in general use in the marble quarries of Vermont. It is *not* the fact that Severance & Holt made or are making such machines, all, without exception, now in operation having been manufactured by the Sullivan Machine Company Messrs. Severance & Holt employ the core drill of Rudolph Leschot. The drill employed in our quarrying machines is the solid head diamond drill. Yours, etc.,

Sullivan Machine Co., R. W. LOVE, Treasurer.

Claremont, N. H.

Metal Founders' Blacking.

To provide metal founders with a blacking possessing good sleeking and heat resisting properties, and to enable them to produce castings with smooth skins of desired hues, the inventor mixes sea weed, sea grass, or sea plants, in any convenient or desired proportion, with still coke, peat charcoal, soft wood charcoal, gas coke, coked coal, oil retort coke, coal dust, soot, hard wood charcoal, or other suitable coke or charcoal, or with lime, chalk, or clay, or with a mixture of two or more of these substances. The seaweed may be added in the newly cut, partially dried, dried, or dried and pulverised state to the coke, coarcoal, lime, chalk, or clay, the latter being either in a rough or ground condition. The addition of seaweed to coke, charcoal, lime, chalk, and clay in every proportion, so long as the moisture is insufficient to cause the mixed mass to form a paste in the process of reducing or grinding or to cause the particles of the blacking when furnished to adhere and form lumps, is beneficial either, first, for improving the quality, or, second, for reducing the cost.

This is an English invention recently patented by J. C. Sellars, Birkenhead.

SILVER SOAP FOR CLEANING SILVER AND BRITANNIA.—One half pound of soap, three tablespoonsful of spirits of turpentine, and half a tumbler of water. Let it boil ten minutes; add six tablespoonsful of spirits of hartshorn. Make suds of this and wash with it.